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HISTORY

OF THE

BRITISH RAILWAYS

DURING THE WAR,

1939-45

BY

R. BELL, C.B.E.

WITH A FOREWORD BY

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FOREWORD

ON September 1, 1939, the Government, under the Defence Regulations, took control of the British Railways, directing the companies to carry on as usual subject to the directions of the Railway Executive Committee. On the same day this executive committee was appointed the agent of the Minister of Transport. It consisted of the chief executive officer of each of the four main-line railway companies and the London Passenger Transport Board together, with Sir Ralph Wedgwood as Chairman, and followed a like earlier committee of an advisory nature appointed in 1938 to secure public safety and the maintenance of essential supplies and services.

During the period prior to the outbreak of war, during hostilities, and since then to the end of the war with Japan, subject to the directions of the Minister, the efforts of the railway companies and the London Passenger Transport Board in operating their undertakings and their factories were directed primarily to furthering the war effort.

The demands upon their organisations were the greatest in their history, and, despite bombing, unusual flows of traffics, and depleted staffs, all the requirements of the fighting and supply services were met in full. Their organisation and equipment were ready for the outbreak of war, and successfully stood the great strain placed upon them.

It is perhaps appropriate for me to quote here what Mr. Winston Churchill wrote when victory was in sight :—

> " I should like to take the opportunity of expressing to the railway managements and to every railway employee the Nation's thanks for the highly efficient manner in which they have met every demand made upon them during the last four years of our desperate struggle with Nazi Germany.
>
> Throughout the period of the heavy German air raids on this country, the arteries of the Nation—the railways—with their extensive dock undertakings, were subjected to intensive attacks. Yet the grim determination, unwavering courage, and constant resourcefulness of the railwaymen of all ranks have enabled the results of the damage to be overcome very speedily, and communications restored without delay. Thus, in spite of every enemy effort, the traffic has been kept moving, and the great flow of munitions proceeds.
>
> Results such as the railways have achieved are only won by blood and sweat, and on behalf of the Nation I express gratitude to every railwayman who has participated in this great transport effort which is contributing so largely towards final victory."

This book describes this great war accomplishment of the railways, and its matter-of-fact pages have been written to enable railwaymen, and those interested in railways, throughout the world to see what was accomplished, and how it was accomplished in those critical years for the nation and for world freedom. Throughout the primary aim has been to deal with the affairs of the four main-line companies, but frequent reference is made to the London Passenger Transport Board, which was necessarily concerned in many questions. Any figures which cover the results of both the main-line companies and the Board are noted accordingly.

Mr. Robert Bell, who was honoured with the Order of Companion of the British Empire for his services in the war of 1914/1918, was in the early part of this war Assistant General Manager of the London & North Eastern Railway Company. After his retirement in May, 1943, he was invited by the railway companies to write this history, and all who are interested in the work of the railways in these memorable years will be indebted to him for this volume.

W. V. WOOD,
President L.M.S.R.,
and Chairman, General
Managers' Conference

EUSTON STATION,
London, N.W.1.
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CHAPTER 1

Government Control of Railways

THE declaration of war in September, 1939, found the railways ready to meet the emergency. As early as 1937 their General Managers had been in touch with the Ministry of Transport about the problems that were bound to arise if Europe became embroiled in another widespread conflict. A clear statement of the Government's intentions was not forthcoming until September, 1938, when the fate of Czecho-Slovakia was trembling in the balance. The Ministry of Transport then stated that control would be taken of the railways and the London Passenger Transport Board's undertaking under authority of a Defence of the Realm Act, which would be passed as soon as the country was in danger through enemy aggression: the precedent of 1914, when recourse was had to the Regulation of the Forces Act, 1871, would not be followed. The time was hardly ripe for extreme action, but, by Order signed on September 24, 1938, the Ministry of Transport appointed the Railway Executive Committee as an advisory body "in relation to all or any of the undertakings of the Railway Companies of Great Britain and of the London Passenger Transport Board, with a view to securing that in a national emergency the powers and duties of the undertakers are exercised in the interests of public safety, or for maintaining supplies and services essential to the life of the community." The Order nominated as members of the R.E.C.—

Sir James Milne	Great Western Railway
Mr. Frank Pick	L.P.T.B.
Mr. Gilbert S. Szlumper ..	Southern Railway
Sir Ralph L. Wedgwood	London & North Eastern Railway
Sir William V. Wood ..	London Midland & Scottish Railway
	with
Mr. G. Cole Deacon ..	Railway Companies' Association, as Secretary.

After electing Sir Ralph Wedgwood as Chairman, and Sir James Milne as Deputy Chairman, the Committee settled down to its task of suggesting to the Minister means for meeting the exceptional demands which a rupture with Germany would throw upon our railway system.

The immediate crisis ended with the Munich settlement, but on October 4, 1938, the Minister of Transport asked the R.E.C. to pursue the consideration of emergency plans and arrangements so that the various schemes might be ready for use at short notice. The Committee therefore met regularly until the end of July, 1939, and did a great deal of useful preparatory work. In fact, so many matters engaged the attention of the Committee that Sir Ralph Wedgwood was requested to retain the chairmanship after he retired in March, 1939, from the post of Chief General Manager, London & North Eastern Railway, which he had filled with distinction since the Grouping of 1923. Sir Ralph agreed to carry on, and Sir Charles Newton, his successor as Chief General Manager of the L.N.E.R., became an additional member of the Committee. It was found expedient to organise the work of the Committee on much the same system as the business of the Railway Clearing House was conducted. A consultative committee was set up to deal with each distinct class of railway questions, and the Secretary brought its minutes before the main body. A list of these committees is printed below.

List of R.E.C. Committees

1. Solicitors.
2. Operating Superintendents.
3. Passenger Superintendents.
4. Goods Managers.
5. Mineral Managers.
6. Docks.
7. Advertising and Public Relations.
8. Accountants.
9. Statistical.
10. Mechanical and Electrical Engineers.
11. Civil Engineers.
12. Signal and Telegraph Engineers.
13. Estate Surveyors.
14. Stores Superintendents.
15. Staff.
16. Sabotage.

A good example of the preliminary work done by the R.E.C. in consultation with the Ministry of Transport is furnished by the issue, in April, 1939, of instructions for dealing with essential railway traffic during a major emergency. This document, known to many railwaymen as " R.E.C.1 ", explained that, when the railways were taken over by the Government, a Railway Control Officer would be appointed at the Ministry of Transport to keep the R.E.C. advised of the general requirements for essential traffic, and of the priority to be accorded to various classes of such traffic. The circular then went into detail about the types of railway movements which would take place in the event of general mobilisation. It described the

functions of Railway Transport Officers (R.T.Os.) and of Movement Officers, who were to act as the channel of communication between Government departments and the railways. The instructions aimed at securing mobility, avoiding congestion on the lines, and preventing random interference with transport arrangements.

Another thorough piece of railway work was the drawing up of programmes for evacuating the civil population of the London area. This covered the running of more than 4,300 trains carrying nearly 1,430,000 passengers. A great deal of thought was also devoted, first to the question of restricted lighting during the "black-out," and then to the wider subject of Air Raid Precautions, which was to call for intensive study as time wore on, The Staff Committee reported upon the recruitment of railway staff for H.M. Forces, and on matters arising from the release of staff, such as allowances to dependants. The Mechanical Engineers were concerned in the construction of ambulance trains and the provision of army training in railway workshops, while the Engineers were interested in precautions for the protection of the line, and in plans for the speedy repair of damage to bridges, tunnels, signal-boxes, telephone exchanges, and other property. The Goods and Mineral Managers had to consider, along with the Superintendents, proposals for bringing private owners' wagons under the common user arrangements, and, in fact, each committee had some remit which broke fresh ground, and could not be settled by a simple reference to precedents.

The R.E.C. originally had its offices at Fielden House, Westminster, but, in the early months of 1939, there was a firm impression in well-advised circles that the first three months of war would be a period of more or less continuous air raids. However desperate the situation in London might become, it was of vital importance that the R.E.C. should be able to exercise its functions. All risk of interference was defeated by the ingenuity of the L.P.T.B. who arranged for the conversion of the discarded tube station at Down Street into a convenient set of underground offices, with sleeping accommodation for a considerable number of staff. Difficult questions of heating, ventilation, and safety devices arose, but the construction of the emergency quarters went ahead steadily and they were ready for occupation when war broke out. In many respects the premises were unique and their planning was a commendable piece of foresight.

While these preparations were proceeding during the summer of 1939, international affairs drifted rapidly towards a fresh crisis. In August the Emergency Powers Defence Act, 1939, was passed and it became lawful, by Order in Council, to make Defence

Regulations "necessary or expedient" for "the efficient prosecution of the war," and for "maintaining supplies and services essential to the life of the community." In particular, a Defence Regulation might authorise the taking possession of, or control of, any property or undertaking, and might empower the appropriate Minister to make orders, rules, and byelaws to further the purpose which he had in view. No time was lost in framing the 1939 Order of Defence Regulations with a section (Numbers 69 to 78 inclusive) relating to Transport. The railway companies were most directly affected by No. 69, empowering the Minister of Transport to take over their undertakings. It also provided that any Order assuming control placed the property of the companies (other than currency, gold, securities, or negotiable instruments) at the disposal of the Government, and required the owners to carry on as directed while the Order was in force. As proprietors of the largest fleet of road vehicles in the country, the railway companies were interested in Regulation 70, which gave the Minister power to regulate traffic on highways and to determine the routes to be taken by vehicles or even prohibit their use altogether. As dock-owners, the railways were concerned in the general power conveyed by Regulation 74 to the "competent authority" (Board of Trade, Ministry of Transport, or Ministry of Shipping, as the case might be) to regulate, facilitate, or expedite traffic at ports. Again, under Regulation 75, the "competent authority," in order to avoid undue congestion at any port or railway premises, might cause to be removed and stored elsewhere any goods not taken away with reasonable despatch. Finally, the same "competent authority" could enforce Regulation 77 and direct the holding of an enquiry into any particular question by anyone whom he chose to designate.

By virtue of the wide authority conferred upon him the Minister of Transport drew the Emergency (Railway Control) Order, 1939, on September 1, taking control of :—

(a) the main-line railways and the L.P.T.B. ;

(b) the East Kent, Kent & East Sussex, and Shropshire & Montgomeryshire Light Railways ;

(c) the King's Lynn Docks & Railway Company ; and

(d) the Mersey Railway Company.

The Minister also appointed the Railway Executive Committee, as it was then constituted, to be his agents for the purpose of giving directions under the Order and instructed the railway companies to carry on as usual, subject to the directions of the Committee. On the same date Mr. R. H. Hill, C.B., was appointed Railway Control Officer. One of his first acts was to tell the R.E.C. that the

undermentioned traffics were declared by the Government to be essential:—

A.R.P. stores and equipment.
Coal to power stations, gas works, sewage works and water works, munition works (including coke ovens, blast furnaces, and iron and steel works), and for bunkering.
Farm livestock.
Feeding stuffs for livestock and poultry.
Food stuffs for human consumption—the following:—
  Grain and flour,
  Sugar,
  Potatoes,
  Perishable foodstuffs.
Hydrocarbon oils (petrol, fuel oils, and engine lubricating oils).
Medical stores and equipment.
Pit props.
Telegraph and telephone stores.

Curiously enough, no general announcement was made about the new arrangements by the Ministry of Transport, presumably because the public were not affected directly by the changes in administration. Passengers and traders were expected to go on communicating with the railway companies as they had been accustomed to do in peace time. The railway companies did issue a notice at the end of August, 1939, expressing regret that in consequence of the crisis their services might be curtailed or interrupted; they could only book passengers and accept traffic as circumstances permitted, and then only on the understanding that they would not be responsible for delay, damage, or loss. On September 3 the first of a series of notices bearing the imprint "By Order of the Railway Executive Committee" appeared. This intimated that, owing to the pressure of war requirements, the "Green Arrow" and "Blue Arrow" registered transit arrangements for expediting delivery of consignments by railway were suspended. If the Ministry had first issued a statement to explain the transport situation there might have been less uncertainty among the public about the functions of the R.E.C. and the responsibilities of the companies during the period of control.

Perhaps it should be made clear that the R.E.C. had no concern in the financial arrangements arising out of the control of the railways. As explained in the next chapter, these were the subject of prolonged negotiations between the Government and the Railway Companies' Association. It is true that the General Managers usually represented the Association at meetings with the Ministry of Transport, but they appeared, not as members of the R.E.C., but as the principal officers of their companies and acted on the instructions of their Boards of Directors.

CHAPTER 2

Financial Arrangements during Government Control

First Agreement

WHEN the railways were taken over by the Government in August, 1914, they were guaranteed the same net receipts as they earned in 1913, subject to certain adjustments and understandings in respect of interest on capital expenditure, and the replacement of stores and material used during the control period. As 1913 was a good year, the companies were freed from immediate anxiety about the position of their stockholders. Their main source of worry was the excessive wear and tear to railway property caused by the heavy traffics of the war period. On this score, the Railways Act, 1921, came to their relief by sanctioning a grant of £60,000,000 to cover all claims for arrears of maintenance, undue deterioration, and replacement of stores, so that, taking everything into account, the treatment meted out to the old railway companies was not ungenerous. In 1939, conditions differed widely from the state of affairs before the last war. After a fairly good showing in 1929, railway earnings declined sharply in the thirties. A partial recovery in 1937 was followed by a bad set-back in 1938, when the general trade of the country was not flourishing, and the competition of other forms of transport was keener than ever. Obviously, 1938, standing alone, could not be taken as a guide in fixing compensation to the rail carriers. Talks with the Ministry of Transport about financial terms had started in 1937, when the companies naturally suggested that they should receive the standard revenue prescribed by the Railways Act, 1921. In peace time their earnings had never reached that level, but with the increased traffic due to a great war the standard rate of return would soon be attained. The Government rejected this proposal, and insisted upon restricting its payments to the average net revenue of the companies during a period of three years before the war. It was also determined to include the London Passenger Transport Board in the financial arrangements, in spite of protests from the companies that the Board's earnings from passenger carryings might have to be supplemented from their own freight receipts. The Government did, however, consent to exclude the year 1938 from the basis period and to work on the results of 1935, 1936, and

1937. In February, 1940, the Minister of Transport was able to present to Parliament a White Paper (Cmd. 6168) containing an outline of the terms settled with the companies and the Board. The paper is concise and, as it cannot be condensed without ignoring material points, is printed in full below :—

1. As from September 1, 1939, the date upon which the Government assumed control, the revenue receipts and expenses of the controlled undertakings will be pooled and the resultant net revenue for each accounting period will be appropriated in accordance with the arrangements set out below.

2. There will be paid out of the pool to each of the controlled undertakings a minimum sum which, in the case of

(*a*) each of the railway companies will be the average of its net revenue for the years 1935, 1936, and 1937 ;

(*b*) the Board will be the net revenue for the year ended June 30, 1939 : adjusted as may be necessary for interest on capital issued or redeemed subsequent to the basic period.

These payments (amounting to £40 millions) will be guaranteed by His Majesty's Government and are referred to as the guaranteed net revenues. They will accrue to the controlled undertakings approximately in the following proportions :—

	Per cent.
London Midland & Scottish Railway Company	34
London & North Eastern Railway Company	23
Great Western Railway Company	16
Southern Railway Company	16
London Passenger Transport Board	11
	100

3. After payment of the guaranteed net revenues any balance in the pool, up to an amount of £3½ millions, will be paid to the controlled undertakings in proportion to their respective guaranteed net revenues.

4. If the net revenue in the pool exceeds the sum of the amounts payable to the controlled undertakings under paragraphs 2 and 3 (£43½ millions) then, until the sum paid to them reaches £56 millions, being the estimated sum required to bring the net revenues of the controlled undertakings up to their standard revenues, one half of the excess over £43½ millions will be paid to the Exchequer and the other half will be paid to the controlled undertakings in proportion to their respective guaranteed net revenues : Provided that if the share of any of the controlled undertakings, together with its net revenue from other sources, would result in that undertaking exceeding its standard revenue, the excess will be paid to the other controlled undertakings in proportion to their respective guaranteed net revenues, but so that in any case the total net revenue accruing to a controlled undertaking shall not exceed its standard revenue.

Standard revenue means in relation to a railway company the standard revenue ascertained under the Railways Act, 1921, with allowances for additional capital as provided by that Act and in relation to the Board means the net revenue necessary to enable the Board to pay the standard rate of interest on its " C " Stock.

5. Any net revenue in the pool remaining after the controlled undertakings have received their standard revenues on the basis laid down in the preceding paragraph will be paid to the Exchequer.

6. In ascertaining the net revenue of a railway company there shall be excluded any net revenue derived from investments in road transport undertakings and from ownership of and investments in railways in Northern Ireland or Eire. Net revenue in relation to the Board means the whole of the net revenue of the Board ascertained in accordance with the statutory form of railway accounts.

[NOTE.—Pursuant to the provisions of section 40 of the Civil Defence Act, 1939, repayments will fall to be made by the railway companies to the Exchequer of one-half of the grants made for air-raid precautionary measures if net revenues accrue to them in excess of their respective guaranteed net revenues, and by the Board if net revenue accrues to it in excess of its average net revenue for the years ended June 30, 1937, 1938, and 1939 inclusive.]

7. After December 31, 1939, the London Passenger Pooling Scheme will be suspended, and any guarantees dependent upon the pool established by that scheme will, during the period of suspension, be related to the pool to be established under these financial arrangements.

8. For the period of control ended December 31, 1939, the Exchequer will contribute a sum equal to the amount by which the guaranteed net revenue of the Board for that period exceeds the net revenue which accrued to the Board after the operation of the London Passenger Pooling Scheme during that period. This contribution will form part of the net revenue of the pool.

As between the Board and the Exchequer there will also be payments so as to adjust the net revenue of the Board for the six months ended December 31, 1939, to the amount of £2,430,000, being the estimated net revenue for the corresponding period of the previous year.

9. Provision will be made (among other matters) for :

(*a*) the standardisation of charges for maintenance (including renewals) on the basis of the average of the charges made in the basic period, subject to adjustment for altered conditions ;

(*b*) the cost of restoring war damage up to a maximum of £10 millions in any full year (and *pro rata* for part of a year) to be charged to revenue expenditure when the damage occurs ;

(*c*) the revenue receipts and expenditure in respect of the requisitioning by the Minister of Transport of privately-owned wagons to be included in the revenue receipts and expenditure of the controlled undertakings.

10. Rates, fares, and charges will be adjusted to meet variations in working costs and certain other conditions arising from the war, and machinery will be provided to this end.

11. The Minister of Transport or the railway companies and the Board jointly may, after the end of the year 1940, propose revision of these arrangements for any cause of a major character and, if agreed, the arrangements shall be revised accordingly.

12. These arrangements have been agreed between the Government, the railway companies and the Board on the understanding that it will be open to certain other controlled railway companies to become parties to the arrangements on similar terms.

The figures quoted in clauses 2, 3, and 4 were approximate only. In July, 1940, the Minister of Transport reported to Parliament (Cmd. 6216) that the net revenue of the pool for the period from September 1 to December 31, 1939, was estimated to be £13,835,000, so far as the four main-line companies and the L.P.T.B. were concerned. In February, 1941, the Minister estimated the net revenue for 1940, the first complete year of the pool, at £42,763,000, but that figure included minor controlled railways. (Cmd. 6252). Both of the White Papers stated that the figures were subject to examination on behalf of the Government. In practice, the enquiries made by Government investigators into railway accounts are not confined to matters of principle, but invariably go into great detail, so that years elapse before a final settlement is reached.

CHAPTER 3

Railway Rates and Charges

THE financial arrangements described in the last chapter were framed with the express object of giving railway managements an incentive to run their systems efficiently and economically. The railways lost the benefit of the statutory provisions which applied before the war to the fixing of rates and charges. Statutory Rules & Orders, 1940 (563), which was inserted in Defence Regulation 69, enacted that, during the period of control, no annual review of charges should be held under Section 59 of the Railways Act, 1921, and that no general revision or variation of charges should be carried out under Section 35 of the 1921 Act or under Sections 29 or 34 of the London Passenger Transport Act, 1933. The outcome of the new scheme depended upon the prompt adjustment of rates, fares, and charges to offset the inevitable rise in working costs. On March 6, 1940, the Minister of Transport directed the R.E.C. to proceed in accordance with machinery which he had agreed with the companies and the Board. A statement of nine clauses, required to define the procedure, is quoted below :—

Machinery for the adjustment of charges during "Control"

(1) The jurisdiction of the Railway Rates Tribunal in regard to the general level of charges will be suspended. Instead, the Minister will, by Order under the Defence Regulations, adjust the charges (which expression includes rates, fares, tolls, dues, and other charges) in operation at the outbreak of the war to meet variations in working costs and other conditions arising from the war. The jurisdiction of the Railway Rates Tribunal in other matters will continue, unless and until circumstances arise which render it impracticable.

(2) The Railway Executive Committee will estimate quarterly the effect of variations in working costs and other conditions as, for example, the cost of meeting charges for war damage on the basis agreed, and the loss of earning power of the Board due to war conditions. They will submit to the Minister such estimates and, if they consider that the sum involved is sufficient to justify an increase in charges, their proposals for such increase.

(3) The first estimate will be under two heads, namely :—

(*a*) the increase in cost from September 1, 1939, up to a future date ; and

(*b*) the increase in cost per annum from the future date.

(4) The estimates and proposals will be examined by the Minister and the Minister will, unless he considers it unnecessary or undesirable, seek the advice of a Consultative Committee as to the increase which should be made to adjust charges in accordance with paragraph (1).

(5) The Consultative Committee will consist of the permanent members of the Railway Rates Tribunal acting in an advisory capacity. They will,

on any reference, be informed of the sum to be raised and of the proposals of the Railway Executive Committee, and will be asked to advise the Minister what is, in their opinion, the best method of increasing charges to produce the requisite sum. They will not, unless the Minister so indicates, hold any public inquiry.

(6) After considering all the circumstances, including the advice of the Committee if the matter has been referred to them, the Minister will, by Order, authorise such increase as is appropriate to adjust charges accordingly. The increase will not necessarily be the same on all charges. Some charges may indeed be exempted from increase, or even reduced.

(7) In the event of the estimate of the Railway Executive Committee showing a reduction in the costs mentioned in paragraph (2), the Minister will under like procedure make an Order substituting appropriately reduced charges for those then authorised.

(8) Any representations by a representative body of users as to the level of charges will be considered by the Minister and if necessary referred to the Consultative Committee for their advice.

(9) All Government traffic will be paid for by the Departments concerned. The charges will be fixed broadly on the same considerations as would apply to large commercial concerns, so that, for example, the volume and regularity of the traffic will be taken into account in fixing charges. Any dispute as to the charges to be paid will be referred to the president of the Railway Rates Tribunal as arbitrator, with the other two members as assessors.

The R.E.C. lost no time in submitting the first set of estimates required by this machinery. In its view, the variations in working costs and in other conditions arising from the war justified :—

(i) a general increase of 10 per cent. in the charges of the main-line companies, with a similar increase in L.P.T.B. rail fares ; and

(ii) a set of additions to the L.P.T.B. road fares, many of which were too small to be adjusted by a percentage.

On April 17, 1940, the Minister accepted the first proposal, and issued the Railways (Additional Charges) Order, 1940. The increase accordingly took effect as from May 1. In view of the special difficulties in adjusting road fares for short stages, the Minister desired the Consultative Committee to advise him as to the best means of increasing these fares so as to obtain a sum equivalent to 10 per cent. of the receipts in question. After holding a public enquiry in May, 1940, the Committee recommended adjustments calculated to yield an additional revenue of £2,000,000 a year, and on June 26, 1940, the Minister issued the Railways (Additional Charges) No. 2 Order, 1940, authorising the proposed increase in fares. With three exceptions, the higher fares were brought into force on July 3, 1940.

The R.E.C. again reviewed working costs and the financial effect of war conditions on railway revenue in August, 1940. It

felt justified in proposing that railway rates and fares should be increased, as from October 1, 1940, by 17½ per cent. instead of 10 per cent., and also that L.P.T.B. fares should be adjusted to a further extent. The Minister of Transport on this occasion referred the whole scheme of alterations to the Consultative Committee and requested it to hold a public inquiry. At the hearing, which lasted for ten days, Sir William V. Wood and Mr. T. E. Thomas explained the proposals and estimates of the R.E.C. These were criticised in detail on behalf of the Mining Association, the British Iron & Steel Federation, the National Farmers' Union, the Traders' Co-ordinating Committee, and other representative bodies of traders. Strong objections also came from many quarters to further increases in the season ticket rates and workmen's fares of the main-line companies and in L.P.T.B. rail and road fares. Among the opposing parties were the London and Middlesex County Councils, a number of boroughs in the London transport area, and various bodies representing the interests of the travelling public. After giving due weight to all the evidence, the Consultative Committee recommended that the additional charge of 10 per cent. should be advanced to 16⅔ per cent., except in the case of :—

(i) all first and third class season ticket rates and workmen's fares ;
(ii) all ordinary fares on L.P.T.B. railways ; and
(iii) demurrage and siding rent charges.

The increase of 16⅔ per cent. was also to apply to the ordinary single and return coach fares of the Board. The Minister gave effect to these recommendations as from December 1, 1940, by issuing Railways (Additional Charges) No. 4 and 5 Orders, under date November 23, 1940.

The public probably do not appreciate the immense amount of work which is caused by a formal inquiry into railway rates and charges before a tribunal. A great strain is thrown upon the railway officers, who represent the companies in peace time, or the R.E.C. during the war, and upon their assistants, who prepare evidence for submission to the court. It was therefore fortunate from some points of view that reasons of high policy were soon to remove the need for a quarterly probe into rates and charges.

Apart from the stabilisation of charges, the pre-war arrangements for quoting exceptional goods rates were simplified as a war measure. In peace time standard rates were charged mainly on small consignments. Under war conditions the railways adopted the practice of treating the standard rate as the appropriate charge except in cases where reasons, such as continuous and heavy traffic, justified an exceptional rate. Measures were also taken to place the

quotation of exceptional rates on a uniform basis, so that the company receiving an application from a trader could fix the charge on behalf of all the companies concerned. All the permanent exceptional rates recorded in the books at the outbreak of war remained in force, but the railways declined to reduce rates or arrange new exceptional rates in competition with other means of transport.

Over a thousand agreed charges for freight and passenger train traffic were operating in 1939. Many of these charges were based on tests of traffic which had been passing partly by rail and partly by road. The whole of the figures were tested afresh and renewal charges were arranged representing the average transport cost which the trader would have incurred under the altered circumstances. The revision was carried out energetically, and, by lifting the general level of agreed charges, kept them in proper relation to the increased exceptional rates. It was also decided that new agreed charges would be arranged only in cases where clerical work would be saved to the railways or to traders. In the Railways (Carriage Paid) Direction, 1942, the Minister of War Transport excluded merchandise for a trader with whom an agreed charge had been settled. The Direction also led to the fixing of about 800 agreed charges for returned empties, which for many years had been sent back to their owners "carriage forward." A copy of this Direction, which attained its object of saving clerical work, is given in Appendix 1, together with an amending Direction issued in March, 1943.

The charging of Government merchandise traffic offered another opportunity for simplifying clerical work and saving man-power. In 1941 the Government, after protracted negotiations, agreed that all its traffic should be charged at the following percentages below standard :—

	Per cent.
Coal class traffic and traffic in Classes 1 to 6	10
Traffic in classes 7 to 10	15
" " " 11 to 20	20
Petrol and explosives in classes 18, 19, and 20	33⅓

In addition, a deduction of 5 per cent. was made from the total of the Ministry of Food's account, because rates on foodstuffs were on a low level. After an experimental period of three months, the average rate charged on the above basis was accepted as the flat rate for each Government Department in future, on the understanding that an examining committee would adjust the figures as necessary. A list of the flat rates finally settled is given in Appendix 2. These rates were, as nearly as possible, equivalent to the charges which would apply to ordinary commercial traffic. Responsibility

for carriage accounts incurred by U.S.A. War Departments was accepted by the appropriate British service and the flat rate for that service was charged.

The introduction of this system of charging traffic by merchandise train proved a success, and on December 1, 1942, flat rates came into force for Government traffic consigned by passenger train. These rates were applied to unaccompanied traffic charged on a weight basis or at the loaded van scale, but not to traffic chargeable on a "per mile" or "unit" basis, such as horses and motorcars. The bulk of passenger rated traffic, it may be explained, is conveyed at mileage zoned scales of charges; but over a long period of years, thousands of exceptional "point-to-point" rates had been quoted for regular consignments of specific articles such as fish, butter, cream, and cut flowers. All rates on the books immediately before the war were retained, but new rates were not quoted.

Passenger fare arrangements were simplified by the withdrawal of cheap day return fares and certain other cheap facilities, but a number of concessions was made in various directions. The minimum fares for monthly return tickets were waived as from October 5, 1942. Owing to the large number of persons employed on irregular shifts of duty, more latitude was allowed in the issue of workmen's tickets outside of the normal hours. Passengers to farming and forestry camps were carried at single fare for the double journey. Men and women employed on Civil Defence, Home Guard, and Fire Guard night duties were granted return tickets at single fare available for two days. Members of Dominion, Colonial, and Allied Forces were given the same travelling privileges as H.M. Forces and members of the Mercantile Marine, when travelling on leave to and from their ships, were treated similarly.

Two further concessions, made in the interests of men on war service, may fittingly be mentioned here. The Railways (Restriction of Passengers' Luggage) Order, 1942, limiting the amount of personal luggage to 100 lb., did not apply to members of H.M. or Allied Forces, to merchant seamen, or to persons proceeding abroad. Of more importance was the conveyance at half the ordinary rate from the port of entry to destination of gifts of all descriptions from overseas. This concession applied to clothing, foodstuffs, medical supplies, and ambulances forwarded by the American Red Cross, Canadian Red Cross, "Women of Australia," "South African Voluntary Service," and similar organisations to the British Red Cross Society and various charitable institutions. This concession came into force in 1940 and in 1942 was extended to gifts sent to our ports for shipment to Russia and for despatch to prisoners of war on behalf of the British Red Cross.

CHAPTER 4

Financial Arrangements during Government Control

Second Agreement

ALMOST before there had been time for the financial arrangements detailed in Chapter 2 to take full effect, the Government informed the railway companies that as a matter of general policy " war damage was to be compensated " and that, instead of the cost being charged to working expenses, contributions by the companies were to be treated as capital charges. This intimation was followed by a statement made by the Chancellor of the Exchequer, Sir Kingsley Wood, in introducing the Budget on April 7, 1941. The Chancellor announced that the Government was determined to create the most favourable conditions for waging a battle against inflation. The general policy would be to restrict increases in prices to a minimum. Transport costs were an important factor in determining the general price level and it was a question how far the Exchequer might help in averting further increases in railway rates and fares. The burden on the Exchequer would be increased in order to minimise the impact of increased costs, particularly of imports and of transport, on the prices of essential goods and services. The Minister of Transport drew the attention of the railway companies to this " most important development of policy," to quote the Chancellor's own words, in a letter of April 16, written to Lord Stamp, Chairman of the Railway Companies' Association. The letter was not received by Lord Stamp, as unhappily he was killed by enemy action that night, but in June, 1941, the Minister of War Transport orally notified the chairmen of the main-line companies and the L.P.T.B. that the existing terms of agreement would have to be revised in respect of railway rates, fares, and charges, as well as war damage. He also intimated that, in the Government's view, the revision should be on the basis of a fixed guarantee from December 31, 1940.

Negotiations ensued, but it soon became clear that the Government was determined to require a fixed annual payment to the railways instead of a share in their net receipts, and eventually this was settled at £43,000,000. In the difficult war situation in the summer of 1941, the companies and the Board were at a dis-

advantage in pressing for more equitable treatment. In September, 1941, the Minister of War Transport was able to present to Parliament a White Paper (Cmd. 6314) outlining revised arrangements which had been agreed by all parties. The first three clauses recite facts already stated ; the crucial clauses are :—

4. Under the revised arrangements fixed annual payments amounting to £43 millions are to be made from December 31, 1940, to the four railway companies and the London Passenger Transport Board as follows :—

Great Western Railway Company	£ 6,670,603
London & North Eastern Railway Company	10,136,355
London Midland & Scottish Railway Company	14,749,698
Southern Railway Company	6,607,639
London Passenger Transport Board	4,835,705
	£43,000,000

As is the case under the existing arrangements, there will be charged or credited (as the case may be) to the pool of receipts and expenses of the controlled undertakings :—

(*a*) the interest on capital raised or capital redeemed after the end of 1937 in the case of the railway companies and after June 30, 1939, in the case of the London Passenger Transport Board; and

(*b*) interest on any difference between the amount of money invested by the railway companies in the excluded undertakings (*see* paragraph 6) and the amount so invested at the end of 1937.

5. In future the net result of the pool is for the account of the Government who will receive any surplus and make good any deficiency.

6. Net revenue derived from investments in road transport undertakings and from ownership of and investments in railways in Northern Ireland or Eire and from certain minor undertakings will continue to be excluded from the pool.

7. Maintenance charges (including renewals) are standardised on the basis of an average pre-war charge adjusted for variations in assets in service and in price levels.

If the actual expenditure in any year of control is less than the standard, the difference, representing arrears of maintenance, is to be invested in Government securities through trust funds in the joint names of H.M. Government and each controlled undertaking. These funds which will accumulate at interest will meet the cost of any arrears of maintenance overtaken during control, and at the end of control amounts equal to the net arrears of maintenance (calculated with reference to the trend of variations in prices) will be paid to the relevant undertakings. The balance of the funds, subject to meeting any approved claims arising out of control, will be passed through the pool account for the final accounting period of control. In these respects the arrangements remain as originally agreed.

8. The previous arrangements in regard to (*a*) payments by the undertakings of one-half of Exchequer grants made for air-raid precautionary measures (*see* note to paragraph 6 of Cmd. 6168) ; and (*b*) revenue receipts and expenditure in respect of the requisitioning of privately owned wagons (paragraph 9 (*c*) of Cmd. 6168) will continue.

9. War damage suffered by the controlled undertakings since the outbreak of war will be dealt with under the new scheme to be introduced by the

Government for public utility undertakings and will not be charged as revenue expenditure. Having regard to the retrospective liability which the controlled undertakings will assume under the new scheme, they will retain at their disposal any sum charged to the pool account for the year 1940 under paragraph 9 (*b*) of Cmd. 6168.

10. The levels of rates, fares, and charges will be determined by the Government during the period of control and the arrangement (paragraph 10 of Cmd. 6168) requiring them to be adjusted to meet variations in working costs and certain other conditions arising from the war, including war damage up to £10 millions in any year, will cease to have effect.

11. Control will be continued for a minimum period of one year after the cessation of hostilities. Before control comes to an end (*i.e.*, before all statutory rights and obligations as they exist at that time again apply to the controlled undertakings), time will be given for the operation of any statutory machinery governing the level of charges.

12. A corresponding revision will be made of the financial arrangements with controlled undertakings other than the four amalgamated railway companies and the London Passenger Transport Board.

At this stage, it seems desirable to explain the procedure for giving effect to the new financial arrangements. A short Act was passed in December, 1940, to enable "railway undertakers under the control of the Minister of Transport to make agreements with him, and with one another, providing for financial matters arising out of, and in connection with, such control." This measure, known as the Railways Agreement (Powers) Act, 1940, authorised the Minister of Transport (*a*) to confer on controlled railway companies powers to enter into and carry out the agreements in question, notwithstanding any statutory limitation, and (*b*) to suspend the pooling scheme established under Section 31 of the L.P.T. Act, 1933. Every such order made by the Minister had to be laid before Parliament "as soon as may be after it is made" and would become void if either House, within a period of 40 days, resolved that the order should be annulled. By virtue of his powers under this Act, the Minister issued on December 19, 1941, the Railways Agreement (Powers) Order, 1941, authorising the railway companies to complete the Railway Control Agreement, which embodies the heads of arrangement set out above. The Order also suspended the London Passenger Pooling Scheme as from January 1, 1940, until the expiration of the last accounting period under the Railway Control Agreement.

Though the Government has not increased railway charges to cover the enhanced costs of labour and materials since the revised agreement was made, the net earnings of the main-line railways, the L.P.T. Board, and the minor railways have been in excess of their fixed annual payments every year, and the surplus profits accruing to the Government have been (in round figures) :—

		£			£
1941	.. ..	21,700,000	1943	.. ..	62,000,000
1942	.. ..	45,700,000	1944	.. ..	46,800,000

War damage had ceased to be a charge and the railway proportion of it fell on the companies. At the annual meetings of railway stockholders in 1944 resolutions, sponsored by the British Railway Stockholders' Union and the L.N.E.R. Stockholders' Association, were passed asking the boards of the companies to make representation to the Government that the control agreement was inequitable in operation, and should be revised in such a manner that the companies would receive the standard revenues prescribed by the Railways Act, 1921. The chairmen of the four companies accordingly met the Minister of War Transport on April 20, 1944, and pointed out that the extension of the war area in December, 1941, had thrown a far greater burden on the railways than was contemplated when the agreement was negotiated. The great expansion of traffic had caused a more intensive use of the capital assets employed, and it was unfair that the basic figure of maintenance should be limited to the levels of the years 1935–6–7.

The Minister promised to give a considered reply in writing to these submissions. On June 16 he advised the Chairman of the Railway Companies' Association that the Government could not accept the arguments advanced at the interview as constituting a case for revising the agreement which, he felt bound to point out, relieved the railways of uncertainty as to the effects of the war upon their net revenues. The agreement also made provision for an allowance for abnormal wear and tear of maintainable assets, if it were agreed to be justified, over and above the basic figure for maintenance; without committing himself in any way, he was prepared to examine the matter without delay. On June 30 Lord Royden expressed the disappointment of the railway chairmen at the Government's decision, and welcomed the Minister's assurance that the question of abnormal wear and tear would be investigated. It may be noted that the share taken by the Government of the net earnings of the companies was not in the nature of an Excess Profits Tax, as the ordinary provisions of the Finance Acts applied to them, but in practice the low level of the profits retainable by the railways has not warranted any claim for E.P.T.

For convenience of reference, a copy of the Railway Control Agreement is attached as Appendix 3. With the main document is printed a copy of letters exchanged between the Treasury Solicitor and Mr. I. Buchanan Pritchard, Chief Legal Adviser, L.N.E.R. Company, in April, 1942; these letters embody an understanding on various points arising out of the agreement.

CHAPTER 5

Organisation Adopted by the Railway Executive Committee

On September 3, 1939, the day that war was declared on Germany, the R.E.C. moved into its emergency headquarters, and met there in daily session until the first rush of urgent business was disposed of and the preliminary difficulties inseparable from the changeover to Government control of railways were surmounted. At the beginning there was a good deal of uncertainty about the exact nature of the R.E.C.'s functions. These were never defined with precision, but a workable interpretation of their scope evolved gradually during the process of straightening out many complicated questions which bore on the day-to-day conduct of affairs. In accordance with the Railway Control Order, 1939, the R.E.C. became the channel of communication between the Minister of Transport and the railways. It conveyed his directions to the companies and the Board, and these undertakings supplied daily reports on the traffic situation, which were summarised for the Minister's information. The R.E.C. also prepared minutes or memoranda on subjects remitted by the Minister for its consideration. It was, however, by no means a passive advisory body, but constantly took the initiative in referring important matters to the Government with a considered recommendation for dealing with each case. During the period of control, an individual company could not take independent action in matters which affected other railway systems or involved special expenditure. Its correct course was to raise the matter with the R.E.C. and ask for a ruling. The R.E.C. then minuted its conclusions and, where necessary, obtained the approval of the Ministry of Transport. Minutes drawn on subjects of first-rate importance were naturally discussed with the Ministry and in 1941 a Controller of Railways Conference was set up at the Ministry for the express purpose of reviewing important reports and recommendations from the R.E.C. The Controller of Railways presided over the proceedings and was generally able to reconcile the views expressed by the members of the R.E.C. and by representatives of the Ministry of Transport, who were interested in subjects on the agenda. The Minister occasionally came to a meeting of the Conference when he wished to get into direct touch

with the R.E.C. about some matter of high policy and its weekly gatherings often helped all parties concerned to reach agreement on questions which offered openings for wide differences of opinion.

In September, 1939, the consultative committees of departmental officers dropped the word " consultative " from their titles, as they had become one of the principal parts of the executive machinery. They handled all subjects referred to them by the R.E.C., as well as matters which individual members raised, in order to make certain that all companies proceeded on uniform lines. The minutes of these committees were subject to the approval of the R.E.C., and the General Managers then gave effect to the decisions. The committees had no executive authority over their members, each of whom remained responsible to his own General Manager for the conduct of his department. Various changes were made in the constitution of the departmental committees from time to time. A Road Transport Committee was added to the number in September, 1939. From January, 1940, the Advertising & Public Relations Committee was converted into the Publicity Committee for handling R.E.C. business. At the same date the Sabotage Committee was renamed the Police Committee, to indicate that the scope of its duties had been broadened. So many questions cropped up in regard to the supply of refreshments to travellers that a Catering Committee was established in February, 1941. A month later the A.R.P. Committee, which came into existence as an inter-railway body just before the war, was transformed into an official R.E.C. Committee and in December, 1942, the Home Guard Committee, which had been at work for two and a half years, was also recognised as being responsible to the R.E.C. Again, when the shortage of fuel became acute in May, 1942, and the companies had difficulty in obtaining supplies of locomotive coal, a Coal Committee was appointed to watch the situation and act as a liaison with the Ministry of Fuel & Power.

With one exception, the R.E.C. Committees did not require separate staffs. Their work, which was mainly of an advisory and consultative character, was performed by the departmental officers and their assistants as part of their ordinary routine, while the Railway Clearing House covered the secretarial duties. The exception was the Operating Committee, whose functions became of paramount importance to the conduct of the war. The task of moving Government traffic fell to the Committee and it had to give effect to the various degrees of priority in transit determined by the R.E.C. Working programmes were frequently altered at short notice, while traffic diversions and other emergencies might happen at any hour of the day or night. The only means of coping

with the exceptional demands for rail transport was to set up an operating office at the R.E.C. headquarters manned by experienced railwaymen selected from the staff of the main-line companies. This office was open continuously and kept in close contact with the Ministry of Transport and other Government departments on the one hand, and with the railway operating officers on the other. On principle, the office acted in an administrative capacity, settling what was to be done and leaving the railway companies to carry out the work. A watch was kept, however, on important moves at each stage of the journey and the office was able to advise the R.E.C., when necessary, about the progress of the traffic working arrangements. While no attempt was made to run the railways from the R.E.C. headquarters, the methods adopted by the operating office meant that, in a large measure, the railways were treated as a unified system for war purposes. Throughout the six years of hostilities, the operating organisation was under the control of Mr. V. M. Barrington-Ward, who was Superintendent, Southern Area, L.N.E.R., at the outbreak of war, but was later appointed Assistant General Manager (Operating) of his company. This arrangement, which was regarded as temporary by the L.N.E.R. Board, gave Mr. Barrington-Ward all-line responsiblities on that railway, which fitted in conveniently with his R.E.C. functions. The L.M.S.R. also liberated Mr. L. P. Ball from his post of Assistant Divisional Superintendent, Crewe, to deputise for Mr. Barrington-Ward in connection with R.E.C. affairs. This organisation corresponded pretty closely with the arrangements in force during the last war, when operating matters were supervised for the R.E.C. of that era by Sir Arthur Watson, with the aid of Mr. T. W. Royle.

Fortunately only three alterations have to be recorded in the membership of the R.E.C. In September, 1939, Mr. Gilbert Szlumper was appointed Director-General of Transportation & Movements at the War Office, and was succeeded by Sir Eustace James Missenden. On the retirement of Mr. Frank Pick from the London Passenger Transport Board in May, 1940, Lord Ashfield joined the Committee, bringing a unique experience of transport negotiations to its table, as he was President of the Board of Trade from 1916 to 1919 and in that capacity was Chairman of the first Railway Executive Committee. In August, 1941, Sir Ralph Wedgwood resigned the chairmanship of the R.E.C. and his place was taken by Sir Alan Garrett Anderson, who also became Controller of Railways under the Ministry of War Transport. At the same time Sir James Milne was appointed Deputy-Chairman of the R.E.C.

At the meeting of the R.E.C. held on August 8, 1941, a minute was passed in these terms :—

" It was moved by Sir James Milne and unanimously agreed to place on record the Executive Committee's regret at the resignation of Sir Ralph Wedgwood from the Chairmanship and their great appreciation of the invaluable services which he has rendered in his capacity as Chairman of the Committee since its inception. They also desire to record that his outstanding ability and experience have proved of the greatest value to the Committee in considering the many difficult problems which have come before them since the outbreak of war."

Sir Ralph was called upon to pilot the R.E.C. through the first two years of its existence—the most trying period of the war, both for this country and for our transport system. He applied himself indefatigably to the problems of the railways and took a keen interest in every subject which came within the purview of the executive body. His anxiety to help the Chairmen and members of the various departmental committees won their willing co-operation and he was thus able to hand over a well-organised machine to his successor.

In April, 1945, the Minister of War Transport agreed to release Mr. G. Cole Deacon from the Secretaryship of the R.E.C. so that he could resume his permanent post of Secretary to the Railway Companies' Association, and nominated Mr. E. G. Marsden as his successor.

CHAPTER 6

WARTIME ORGANISATION OF THE RAILWAYS

BEFORE the war, the main-line railways had organised their traffic operating on independent lines to suit the economic and geographical characteristics of the territories which they served. After September, 1939, each company retained its own methods of working, but adjusted its standing arrangements to meet the altered circumstances of a state of war, which shook up old customs and sidetracked commercial considerations. The mission of rail transport was to move the greatest possible volume of traffic on Government account with the least possible expenditure of locomotive power and man power, while keeping the people supplied with goods essential to their wellbeing. It soon became evident that a special traffic office was needed at each railway headquarters to keep in touch, at all hours of the day and night, with the three fighting services and with all Government departments concerned in transport. Alone among the railways, the London & North Eastern was organised on a divisional system, with Area Managers at London, York, and Edinburgh, to whom wide executive powers were delegated. In peace time, this organisation worked smoothly and relieved the Chief General Manager of a great deal of detail, but under war conditions it had the drawback of not providing an operating section with power to act in an all-line capacity. In 1942 this weakness was remedied by constituting a Central Traffic Office at Marylebone and placing it under the charge of Mr. V. M. Barrington-Ward, who, as explained in chapter 5, became Assistant General Manager (Operating), while remaining Chairman of the R.E.C. Operating Committee. These steps, which were regarded as temporary war measures, brought the four companies on to the same footing so far as operating headquarters arrangements were concerned. The companies had already established special sections in their divisional and district operating offices to carry out the Superintendents' orders and to attend to local requirements. The responsibilities of these sections were increased in July, 1940, when the War Office decentralised much of the work of its Military Movement Control by splitting the various Commands into Movement Control Districts, with headquarters located at convenient

transport centres. This change simplified procedure and got minor moves arranged without fuss or delay.

During the early months of the war the exchange of freight traffic at junctions proceeded without much difficulty, in accordance with established practice. In normal times the fixing of routes and the allocation of traffic between alternative routes depended mainly upon commercial considerations. About the middle of 1940 an increase in the volume of traffic, accompanied by many changes from the peace-time flow of loaded wagons, led to some congestion at junctions, as well as in marshalling yards and on running lines. The pre-war routing arrangements were immediately reviewed, with the object of using the available routes to the best advantage and preventing accumulations of wagons under load, especially at ports or other forwarding centres. Some relief was obtained, but in February, 1941, a fresh organisation was set up to overhaul the whole arrangements for interchanging freight traffic. A committee, composed of the Assistant Superintendents of the four Groups, was assigned the task of adjusting these arrangements so that the main streams of traffic would move along the routes best fitted to give a free passage to freight trains. In other words, the railways were to operate in wartime as a unified system, with the sole aim of keeping fluidity of movement everywhere. To achieve these objects, detailed analyses of traffic passing through junctions were necessary, and the Inter-Company Traffic Analysis Committee, comprising operating and commercial routing representatives, took the examination of exchanged wagons in hand. The joint efforts of these committees reduced transit times for a large tonnage of traffic, and effected valuable economies in locomotive power and in operating staff, at Avonmouth, Thames Wharf, near Doncaster, and elsewhere. So many alterations were made in the old forwarding instructions that new route books or lists were issued by the main-line companies and the Cheshire Lines Committee. A typical example of the modifications introduced was the diversion of over 100 through wagons a day in each direction from the West Coast to the East Coast route between Scotland and England. Again, when the East London line became a poor medium of exchange between the L.N.E.R. and S.R. Companies because it was liable to interference by air raids, about 120 wagons a day were diverted *via* Temple Mills, the Tottenham & Hampstead Line, Gospel Oak, the West London Extension line, and Norwood or Hither Green. A third example was the re-routing of 90 odd wagons a day from Great Western stations in South Wales and the Bristol district to places on the central section of the Southern Railway. Instead of passing through Old Oak

Common, which was overburdened, this substantial block of traffic went by Salisbury and Havant.

The Operating Assistants and Traffic Analysis Committees did useful work in a number of fields, and were retained as part of the executive machinery throughout the war. For instance, they were instrumental in simplifying the records of wagons and sheets compiled at exchange points. The peace-time practice was to keep records at no fewer than 364 points, in addition to the 75 junctions covered by Railway Clearing House number-takers. The railway records were used for controlling special wagons, for tracing common-user wagons, and for accountancy purposes, but were not considered indispensable during the emergency. As from midnight, October 31, 1941, individual number-taking at all exchange points was replaced by bulk number-taking under the three headings of :—

(*a*) wagons loaded with coal and minerals ;
(*b*) wagons loaded with merchandise ; and
(*c*) empty wagons.

This change saved half the time occupied by individual number-taking and avoided train delays which had taken place at some busy junctions. The time spent by freight trains at exchange points was further reduced by modifying the system of wagon examination. Loose-coupled freight trains had been allowed to run 85 miles without examination, but on reaching an exchange point had frequently been examined by both the companies interested in the working. It was laid down as a general principle in 1941 that, for the period of the war, where it was necessary to examine wagons, the receiving company should do so. The practice of a receiving company advising the forwarding company of damage to wagons handed over was also discontinued, seeing that it was immaterial who bore the cost of repairs during the years of Government control. These measures may seem to be of little importance, but they were of benefit to freight train operating, and saved about 40 wagon examining staff.

Between the wars some form of train or traffic control had been extended to the majority of the districts into which the railways are divided for ease of administration. The accepted practice was to link these district controls together through a central control at the Superintendent's headquarters, thus enabling him to operate the whole of his area as a unit. Where gaps existed in the train control systems, pre-war traffic had been well within line capacity, and did not fluctuate markedly from one year to another. The coming of war converted some of these quiet districts into extremely busy sections of the railway, and the logical course was followed by bringing them into the " control " organisation. To

take an extreme case, Aberdeen became a seat of train control on the L.N.E.R., and the exceptional density of traffic on the Cheshire Lines likewise justified the installation of a control at Liverpool Central. It may be added that the control systems were used to an increasing extent to supervise engine working—always an awkward problem—which became more complicated than ever, owing to the vicissitudes of war.

A separate chapter describes the complete revision of the arrangements for distributing freight rolling stock, and many minor changes in organisation are touched upon in treating of other branches of work. What may be described as the final step towards unifying railway operating was taken towards the close of 1941. The Operating Superintendents had met regularly once a week since their committee came into being, but the entry of America into the war, and the resultant pressure on transport facilities, raised many problems which had to be decided out of hand. A daily conference was indispensable for the prompt settlement of these questions, and was made possible by the installation of a special telephone network connecting the four operating headquarters. Thereafter, the Superintendents were virtually in constant session, and were able to make the fullest possible use of all railway resources for getting things done. They could rely upon the co-operation of the rest of the departmental committees, which had developed the habit of team work and, discarding many individual likings and prejudices, strove energetically to help the Superintendents to keep the wheels moving.

Movement to Emergency Headquarters outside the London Area

The general administration of the railways was affected by the war to a surprisingly small degree. Day-to-day business was conducted for the most part on customary lines, save that, in dealing with matters bearing on the war effort, the ordinary procedure was hastened at every stage. The transition from a peace to a war footing on the railways was complicated by the disbandment of their central offices in London. Early in 1939 the Government suggested that, if a state of emergency occurred, it would be politic to transfer large blocks of clerical staff from London to alternative accommodation in the country and set an example by moving out several of its own departments. In the case of the railways, the authorities wished to avoid any risk of the continuity of management being upset by enemy action and regarded the change of headquarters as an extraordinary A.R.P.

measure. The main-line companies accordingly drew up plans to provide office room, and in some cases hostels, for their headquarters staff outside London. Pains were taken to study the convenience of the staff in preparing the various schemes, and much ingenuity was displayed by the engineering and lighting departments in equipping the temporary premises for office use. This dispersal of staff proved to be a wise measure. Though many London offices were either destroyed or seriously damaged, through all the five and a half years of the European war the management of the railways proceeded without a single interruption of any great consequence.

The Great Western Railway decided to establish its emergency headquarters in the vicinity of Aldermaston Station, midway between Reading and Newbury. Beenham Grange, a short distance from the station, was purchased and occupied by the staff of the General Manager, Secretary, and Solicitor on the outbreak of war. The Chief Accountant's staff was located first at Hyde End House, Brimpton, and later at Wasing Place, Aldermaston. The Chief Goods Manager took over Crookham House, near Thatcham; the Chief Cashier was transferred to the G.W.R. Staff Association Institution at Reading; the Registration Office was moved to a house at Cholsey; and the staffs of the Chief Engineer and the London Divisional Engineer were accommodated in waiting rooms, offices, and restaurant cars at Reading. The Estate Surveyor's Department occupied premises near Aldermaston throughout the war, but some of the moves were of a temporary character, as was the use of restaurant cars, stabled at Newbury Racecourse Station, by sections of staff from the Superintendent's Department and various London Offices.

There were disadvantages in having the staff scattered so widely, but a number of single-storey buildings of steel and brick construction were speedily erected near Aldermaston Station, and the bulk of the staff was brought together again. Hyde End House was kept available as an emergency dormitory for staff working at Aldermaston. Two special trains were run daily in each direction to convey staff living in the London area, and at places between London and Maidenhead, to and from the emergency headquarters. Buses were provided by the Thames Valley Traction Co., Ltd., in connection with the trains, to convey staff between the station and Wasing Place and Crookham House. Canteens were installed at Aldermaston, and at the three large houses converted into offices, to cater for the majority of the staff employed at the emergency headquarters, who numbered about 1,700. Special attention was also paid to telephone arrangements. An exchange at Aldermaston

linked the various offices with the main railway and Post Office trunk lines, and would have kept communications open if the main exchange at Paddington had been put out of action.

When air attacks on the South Wales ports became frequent, the Great Western arranged to transfer the Chief Docks Manager's Office from the Pierhead buildings at Cardiff Docks to a house secured by the Company at Radyr, 4½ miles from Cardiff.

The scheme developed by the L.M.S.R. provided for the transfer of about 4,500 people from London to the Grove Estate, north of Watford, in Hertfordshire. The estate comprised an old mansion, with farm and cottage buildings, as well as a large house, all situated in a park of 300 acres. The principal building became the temporary headquarters of the chief officers and the remainder of the staff was accommodated in 32 separate buildings of wooden construction, located at different points in the garden and parkland. The constructional and furnishing work was sufficiently advanced to permit of the removal of 2,200 members of the staff on September 1, 1939. On the morning of Saturday, September 2, it was decided to complete the evacuation by Monday, September 4. The work of transporting a huge volume of papers, books, records, and office equipment was carried out by the company's own staff and vehicles by the evening of Sunday, September 3, so that office work could be resumed on the following morning. It was impossible to provide at once all the working facilities normally available at Euston, but the Watford headquarters was greatly improved in a few months and an entirely new set of telephone instruments was installed, to give internal communication at the Grove and access to all parts of the railway system.

A service of buses was arranged by the L.P.T.B. between Watford Junction and the new headquarters. As the number of buses was limited, arrangements were made for the staff to work in three shifts, and, until a new road was made and a central bus station erected, the staff had to walk through the park to the offices. A large canteen was built for the convenience of the staff and some of the farm buildings were adapted for the use of the Staff Co-operative Store.

In 1941, the office of the L.M.S.R. Hotel Manager was transferred from London to Willow Grange, a house standing in four acres of ground in Church Road, Watford. Preparations were also taken in hand to have emergency quarters ready, in case of need, for the divisional staffs at Crewe, Derby, Manchester, and Glasgow. At Crewe over 300 members of the operating staff, Western Division, could have been moved to premises in the company's works, while at Derby the School of Transport was equipped with telephones

for the use of the Midland Division. A building at 20, Mount Street, Manchester, belonging to the company, was converted into offices capable of housing over 900 people, so that the local staff of a number of departments could have found room there. At Glasgow more elaborate precautions were taken. The estate of Thorntonhall, situated about 8 miles from Glasgow, on the East Kilbride branch, was purchased. The house had accommodation for about 100, and six hutments were erected in the grounds for 600 more members of the staff, with a canteen and other facilities. Fortunately, in no case was it necessary, on account of enemy action, to use any of the emergency offices prepared in the provinces.

The L.N.E.R. did not attempt to concentrate the staffs removed from the London area, but scattered them over widely separated localities. The secretarial work was transferred from Marylebone to York, where the Divisional General Manager accommodated the Secretary and his staff in the splendid pile of offices built for the North Eastern Railway forty years ago. The board room of the old company was used for many meetings of the L.N.E.R. directors during the emergency. The Registrar remained at Liverpool Street Station because safe underground quarters were provided for his staff and records. The Hoo, which stands in a beautiful country-side between the villages of Kimpton and Whitwell, in Hertfordshire, was leased for the occupation of the Chief General Manager and the Divisional General Manager, Southern area. Several departmental officers were also located at H.Q.1 Hitchin, as the temporary headquarters were designated, but there was only room for small sections of their staff. The majority of their people was stationed at places in the suburban area, such as Gidea Park, Woodford, Loughton, Gordon Hill, Cockfosters and Sudbury, though the Estate and Rating Offices went as far afield as Peterborough. The Chief Legal Adviser had an office in Hitchin ; the Chief Accountant moved to Hadley Wood ; the Chief Electrical Engineer was to be found at Oakleigh Park ; and the Advertising Manager occupied a pleasant house at Stevenage. Buildings of stout design were erected at Gerrard's Cross and Shenfield for the use of the Superintendent, Southern Area ; and a third structure was built at Knebworth for the District Superintendent, Kings Cross. The offices of the Superannuation Funds and of the L.N.E.R. Savings Bank were transferred to Peterborough. This wide dispersal of the staff was attended with a good deal of inconvenience, but did not affect the efficiency of the departmental work to any serious degree, and a great deal was done for the wellbeing of the clerks.

In the provinces, the L.N.E.R. had many offices situated at

places on the East Coast, which were open to attack from either sea or air. At the beginning of the war, the Dock Engineering Accounts staff were transferring from a vulnerable site on the Hull dock estate to a house owned by the company at Thorne. Later, a block of offices was erected on a novel principle of construction at North Ferriby, about 8 miles from Hull, and was used by various sections of staff transferred from the "Third Port." In particular the valuable machinery employed for accounting purposes was moved to Ferriby. The District Goods Manager's Office at Sheffield went from the vicinity of the steel works there to a country retreat near at hand. Accommodation was provided at Bawtry for the District Superintendent, Doncaster, and at East Leake for the District Superintendent, Nottingham. At York, emergency offices were constructed below the ancient City walls near the divisional headquarters. The underground rooms were intended primarily for train control purposes, but were used regularly when the telephone and telegraph exchanges at the passenger station were destroyed by enemy action. The disused Scotland Street tunnel provided a ready-made and impregnable shelter for essential staff at Edinbugh, but happily was seldom required. At Aberdeen, Newcastle, and other ports on the east coast, railway and dock work was carried on in the existing offices, in spite of sporadic air attacks and numerous warnings.

In peacetime the Southern Railway had headquarters and divisional offices at Waterloo, Victoria, London Bridge, and Clapham Junction in the London area. Outside London, there were offices at Exeter, Southampton, Eastleigh, Brighton, and Ashford. All these places were vulnerable to air attack, and plans were therefore laid for the dispersal of the whole of the office staffs in case of need. On the outbreak of war, staffs were transferred from the London area to Dorking (Deepdene Hotel, and Dorking North Station), Elmstead Woods, Woking, Orpington, Redhill, Purley, Brighton, and Exeter. Deepdene became the country headquarters of the company, but, except for six months after September, 1939, the offices of the General Manager, Secretary, Solicitor, Stores Superintendent, and Chief of Police remained open at Waterloo. Brighton proved inconvenient as a departmental centre and the staffs of the Registrar and Commercial Superintendent, which had gone there, returned to London Bridge in August, 1940. In the raid of December 30, 1940, the London Bridge offices, together with the records of both of these departments, were destroyed. The Registrar moved once more to Elmstead Woods, while the Commercial Department was rehoused at Waterloo. Except for these changes, and the return of the Chief Mechanical Engineer's

Department to Waterloo, the original evacuation scheme remained in force throughout the war.

At each of the dispersal points, facilities were provided for essential staff to live on the premises. At Deepdene, a large number of men was in residence, and clubs or societies were formed for purposes of recreation. Concerts, dances, garden parties, and other amusements were arranged, usually in aid of charities, and these activities helped to reconcile the staff to long hours of duty and separation from their homes.

After the fall of France in 1940, a fresh scheme was drawn up to ensure that railway operators might continue to act, even after a successful landing by the enemy in Southern England. This scheme aimed at retiring essential operating staff to prepared centres near London, and eventually forming them into five sections. One section would have occupied underground quarters at Waterloo. The other four sections would have been mobile, travelling in specially-adapted trains. Each of the five final emergency centres was capable of taking 120 members of the staff and was kept ready for immediate use ; every detail of equipment, from radio to blankets and food supply, was complete. Happily, these centres were never brought into use, but constituted a reserve of accommodation when the flying bomb attacks of 1944 threatened fresh danger to offices in London. At that time, a number of the staff remaining at Waterloo was temporarily transferred to Horley and Brighton.

The management of the Southern Railway regarded the evacuation schemes as vitally important, and spared no pains in developing them. That it was right in taking this view is demonstrated by the fact that enemy action destroyed the board and committee rooms and the London offices occupied by eleven or twelve departments.

Transfer of Railway Officers to Government Posts

An outstanding feature of the 1914–1918 war was the freedom with which the Government delegated important branches of national work to the management of officers seconded from the railway service. In 1939, as the result of amalgamation, the number of officers who could be spared for such employment was smaller, but the main-line companies contrived to give the Government substantial assistance. Appendix 17 contains a list of officers who were released from their railway responsibilities and occupied civilian posts in various Ministries for lengthy periods. The value of their work has been repeatedly recognised by the Government. The honour of Knighthood was conferred upon Sir Ernest J. H.

Lemon and Sir William A Stanier for their public services. Mr. R. P. Biddle was awarded the distinction of C.B.E. for his share in planning the landings in Normandy. Mr. F. A. Pope's work as Regional Port Director, Calcutta, was recognised by the award of C.I.E. and a similar distinction was given to Mr. R. J. M. Inglis, who took part in a special wartime enquiry conducted by a Government Commission in India. Many officers, while retaining their railway posts, did good service as members of Government committees or scientific bodies engaged in considering wartime developments. Naturally, some of these committees were set up by the Ministry of War Transport, with remits that concerned the railway directly, but other Government departments initiated investigations into subjects of a general or technical nature which were outside the ambit of railway business. Whatever the character of the enquiry might be, the railways were always able to nominate an officer who could participate in it with advantage to the common weal.

The Government made further calls upon our railways for assistance in building up a new transport system in Western Europe. In 1942, a Technical Advisory Committee on Inland Transport was created as part of the machinery for the relief of Europe after the war; but when U.N.R.R.A. was established, it was decided that transport would have to be planned separately. Not until September 27, 1945, did the United Nations agree to constitute the European Central Inland Transport Organisation (E.C.I.T.O.) to "provide for co-ordination both in the movement of traffic and in the allocation of transport equipment and material . . . . with a view to creating conditions in which the normal movement of traffic can be more normally resumed." While the negotiations which led to this agreement were going on, the Western Powers set up a provisional organisation to deal with the western zone of Europe. The arrangements included the Council, which guided the policy of the Executive Board, consisting of representatives of Great Britain, U.S.A., France, Belgium, and Holland. The Board, in turn, carried out its functions through a Director-General (Professor E. R. Hondelink), who was assisted by a special staff. The Government nominated Mr. V. M. Barrington-Ward as the British Member of the Provisional Board and he acted in that capacity while continuing to discharge his duties for the R.E.C. and the L.N.E.R.

Independently of E.C.I.T.O., the Government established, in 1944, a Transport Division of the Control Commission of Germany (British Element). The business of the Division was to ensure the best possible movement of passengers and goods within the British

region of occupation, gradually substituting commercial services for transport conducted by the military authorities. The Government selected Mr. R. J. M. Inglis to take charge of this important transport division and the L.N.E.R. company made temporary arrangements to fill his post of Divisional General Manager, Scottish Area.

Railway Research Service

For twenty years, the main-line railways and the L.P.T.B. have maintained the Railway Research Service to study developments in Europe, the United States, the Dominions, South America, and other countries overseas. The staff of the Service has a thorough knowledge of transport economics and has prepared a large number of valuable reports on important subjects. In September, 1939, in accordance with arrangements made by H.M. Government through the Foreign Office and the Ministry of Transport, the Research Service was called upon to staff the Transportation Section of the Intelligence Department of the Ministry of Economic Warfare. At the same time, provision was made to ensure that the Service Departments should also have free and independent access to the files and records of the Research Service, and equally be able to call upon the members of its staff for advice. In fact, it was the Admiralty hydrographical department that registered the first request in the war on this Service, at its office at Cowley Street, Westminster.

Since the original remit of the Research Service in the performance of its functions for the Ministry of Economic Warfare was to advise the Naval, General, and Air Staffs on transportation questions involved in strategic plans elsewhere than in the British Empire and France (after the occupation of France by the enemy, France and its colonies became included in the remit) the need of the closest correlation of the work for the Services, and for the Ministry of Economic Warfare, became important. The fact that the staff of the Research Service, which had been suitably strengthened for the purpose, was available to each of the Services and to the Ministry enabled much duplication to be avoided.

The extensive library which had been built up over the pre-war years enabled the Service quickly to answer requests, many of an urgent character, put to it by representatives of the War Office, the Air Ministry, and other departments, and such requests averaged, at one period of the war, about 80 a month. Characteristics of Government work, entirely non-existent in the peace-time activities of the Research Service, were numerous requests for comment and criticism of Government reports and memoranda, with the requirement to assess their value. In order to co-ordinate the technical

advice on transport matters abroad given by the different Departments, the Transportation Directorate of the War Office took the initiative in November, 1940, in arranging a weekly meeting to discuss such matters and to deal with any outstanding questions about the assessments of data on railway problems. These weekly meetings were held at the office of the Research Service, whose representative acted as Chairman ; the Secretaryship was held by the Transportation Directorate (War Office), and the Deputy Chairmanship by the Air Ministry. No fewer than 225 weekly meetings of this Committee, which was in its origin quite informal, were held, and were at times attended by representatives of the Admiralty, the Directorate of Military Intelligence, S.H.A.E.F., E.T.O.U.S.A. (U.S.), 21st Army Group, and the Photographic Interpretation Unit of the R.A.F. This Committee pioneered in the field of presenting to the Service Departments a considered and agreed technical opinion on matters affecting the problems of one industry vital to the enemy. The circulation of its minutes gradually, by request, increased to some 30 organisations. They became available at the Supreme Headquarters in three continents, as well as at Washington.

From the commencement of the war, a weekly report was assembled for the Ministry of Economic Warfare on railway developments in enemy countries. Almost from its inception, copies of this report were circulated to the appropriate departments of the War Office and the Air Ministry. At a later date the various American Services, such as the Army, including the Air Force, and the Office of Strategic Services, made extensive use of these weekly intelligence reports, which had to be compiled, produced, and circulated with the greatest possible speed if the maximum value was to be obtained from them. The reports were originally designed as the transportation section of a much larger weekly report, contributed to by the many industrial and commodity sections of the Ministry of Economic Warfare. It is, therefore, of interest that the Transport Weekly Report long outlasted all the others, and reached its 297th and final issue in May, 1945. By that date, its circulation had grown to 90 copies.

As the war progressed, the demands on the Service from various branches of the Air Ministry and the Operational Commands increased rapidly, and, towards the close of the war, a very large part of the work of the Service for the Government consisted of this type of work. In modern warfare, the margin of time between the receipt of information and the action to be taken upon it is necessarily narrow. Thus the staff of the Service became concerned with operational questions which required regular visits to Head-

quarters of Commands. With the establishment of S.H.A.E.F., further responsibilities were laid upon the Research Service, both in respect of pre-D-Day planning, and in regard to the assessment of technical reports, and other matters dealing with the enemy's communications system, and the use he could make of it. Several visits were made to S.H.A.E.F. when it moved to the Continent, and it was not until after the close of hostilities in Europe that the final commitments for S.H.A.E.F. were concluded. A letter of appreciation was received in July, 1945, from Sir Arthur Tedder, Deputy Supreme Commander, expressing thanks to all members of the Research Service for the work they had accomplished for him and his senior air staff.

In another sphere, the work of checking and verifying the data on railway maps of foreign countries proved exacting but useful, and the task of keeping such maps as up to date as possible, in regard to widenings, new lines, cut-offs, the extension of electrification, and improvement of station facilities, was no light one. Closely linked with this type of work was the assembly of the data, and the compilation of several series of handbooks on foreign railways, a responsibility shared co-operatively with the Transportation Directorate of the War Office and other bodies, including the United States Army. The less technical editions, giving a background of the organisation, equipment, and normal traffic, were largely undertaken by the Service in its function for the Ministry of Economic Warfare. Thanks to the records of the Research Service, it was possible to provide data of a useful character in respect of overseas areas, such as North Africa, the Dutch East Indies, Madagascar, Malaya, Siam, Indo-China, Manchuria, Korea, and Japan. Close co-operation was maintained with the United States War Department, the Office of Strategic Science, and the Board of Economic Warfare in regard to certain of these areas. In direct contrast to the war functions of nearly all the departments of the British Railways, the work done for the Government by the Research Service was wholly in respect of the enemy's transport system and the communications at his disposal.

Throughout the war, the normal duties of the Service continued without intermission. In contrast with what had been expected, work for the member-companies reached a level exceeding that of any pre-war year, some months before the conclusion of hostilities in Europe, a reflection of the growing interest in post-war questions. There was difficulty in maintaining the links with overseas railways, owing to the great delay to, and sometimes the loss of, the mails. At no time, however, was touch lost with any of the great Dominion railways, nor, indeed, with the railway administrations of neutral

countries such as Sweden, Switzerland, or Argentina. War creates somewhat similar problems for all railways, such as shortage of motive power, rolling stock, fuel and staff; the overcrowding of passenger trains; lubricating difficulties; and the necessity to develop substitute materials. Throughout the war, the Service was frequently receiving requests, not only from the home railways, but also from the railways in Africa, the Americas, and Australia, enquiring how other railways were resolving these matters.

A weekly report was circulated to the General Managers of the British railways setting out the main developments on railways abroad, in so far as information came to hand and could be divulged. Such matters as black-out regulations, methods of dealing with air attacks, labour difficulties, levels of rates and fares, the co-ordination of transport facilities and rationing of passenger travel, formed a large part of the contents of these reports, which owed much to the co-operation received from Government Departments with which the Research Service was in official touch. The regular despatch of the *Monthly Bulletin* to railways overseas provided a contact with this country which was appreciated by these administrations. Few copies failed to get through, even if some of them could only reach the recipients by the use of Lufthansa planes. In a different sphere was the assistance given to refugee Governments in London, whose railway representatives frequently visited the Service to look up data on their own railway systems, and, at the request of Sir Frederick Leith-Ross, the Service was represented for some years on the Technical Advisory Committee on Inland Transport, which later became the Provisional Organisation for European Inland Transport.

The use made of the Railway Research Service during the world war certainly exceeded anything envisaged by its founders and was not foreseen in the years during which its records were being carefully assembled.

CHAPTER 7

The Railway Clearing House in Wartime

WHEN war was declared, the Railway Clearing House had been in existence for nearly a hundred years. In its extensive, if somewhat gloomy, offices in Eversholt Street, adjoining Euston Station, much indispensable work was performed in adjusting financial settlements and co-ordinating the relations between the railway companies. The primary purpose of the institution was the apportionment between the companies of receipts from through booked merchandise and passenger traffic. Merchandise receipts were divided, broadly speaking, by crediting the companies with fixed amounts for terminal and cartage services, and miling the balance. Receipts from passenger fares were divided generally on a mileage basis. When traffic was pooled, the R.C.H. worked out the settlements in accordance with the various agreements. With the coming of war, most of this work ceased abruptly. Under Government control, traffic receipts had to be apportioned only as between " controlled " and " non-controlled " undertakings, while pooling arrangements fell into abeyance. Clerical work was thus greatly reduced in volume, though the R.C.H. continued to look after such matters as the payment by the General Post Office for the conveyance of Parcels Post by rail, Railway Passengers' Assurance business, and bulk travel facilities for traders.

On the other hand, the secretarial work performed for the companies by the R.C.H. was not diminished. From its earliest years, its board and committee rooms have been a neutral ground for meetings of railway officers at which questions of common interest could be discussed. In course of time, conferences or committees of general managers, accountants, superintendents, and commercial, technical, and legal officers were established, and met periodically to consider subjects affecting the railways generally. These bodies, in turn, nominated many sub-committees to deal with specific remits. The whole of the secretarial duties were performed by the R.C.H., whose staff developed a distinctive style for drafting minutes of the proceedings. The organisation of the R.E.C., described in Chapter 5, restricted the scope of the General Managers' Conference and to a great extent supplanted the R.C.H. committee arrangements. The secretarial work of the committees reporting to the R.E.C. was, however, entrusted, in almost every

case, to the R.C.H., which also looked after several committees appointed to deal with wartime matters in conjunction with Government departments. A Ministry of Supply Liaison Committee was concerned with war materials. More than one committee was constituted to handle the distribution of food supplies; and still more committees were formed in connection with the requisitioning of private owners' wagons. The outcome was that the number of meetings arranged through the R.C.H. increased from 1,621 in 1940 to 2,169 in 1943, or by 34 per cent.

In addition, the R.C.H. remained the medium through which formal agreements were negotiated with traders for "agreed charges" and submitted to the Railway Rates Tribunal for approval. It continued to administer the Railway Freight Rebates Scheme, though the outpayments were limited by the Railway Freight Rebates Act, 1943, to milk and livestock, which received one-fifth of the available net revenue of the Fund. The balance of four-fifths, which would in ordinary course have been paid out as rebates on export coal, was handed over to the Minister of Fuel & Power to be applied for any purpose connected with the production or marketing of coal. Another responsibility of the R.C.H. was the payment, on Government account, of hire charges to 4,000 owners of requisitioned wagons. It also settled accounts for the repairing, oiling, and greasing of these wagons. The whole of the payments, amounting in round figures to £12,250,000 a year, was financed by the L.M.S.R. Company and included as a special item in the Control Accounts rendered to the Government.

Yet another important branch of R.C.H. business relates to the distribution of freight rolling stock. After the 1914–1918 war, the railway companies gradually established "common user" arrangements, which entitled each railway to use as its own ordinary wagons and sheets belonging to any company. The arrangements worked on the principle that a company had a right to a number of wagons equal to the number it owned. At exchange junctions, R.C.H. number-takers recorded the stock passing from one line to another, and the headquarters office then balanced the exchange between the various companies or, in other words, adjusted the differences between the numbers of loaded wagons passing between each pair of railways. From the same records, the office also calculated the payments to be made by each railway for the use of another company's stock, on a basis laid down in the Journey Payment Scheme. As soon as the Government assumed control of the railways, this scheme was suspended, and in 1941 the common user arrangements were superseded by the formation of the Inter-Company Freight Rolling Stock Control, which distributed wagons,

sheets, and ropes from day to day between the railways in accordance with proved needs. At the same time, the Freight Rolling Stock Committee, comprising representatives of the four main lines, was set up to keep the working of the Control under review, and to deal with the many problems attendant upon the distribution of rolling stock in wartime. These changes caused some secretarial work for the R.C.H., but reduced the number-taking at junctions. Instead of recording individual wagon numbers, the R.C.H. staff merely noted the total number of wagons exchanged. Rolling stock was, in fact, treated as though the railways were unified; and thus within the lifetime of a generation the old code of complicated mileage and demurrage regulations, which safeguarded the position of individual companies, was replaced in the national interests by a system designed to make the best use of the available plant.

On balance, the changes in pre-war practice which have been described reduced the staff requirements of the R.C.H. In August, 1939, the Secretary, Mr. J. E. T. Stanbra, supervised a staff of 1,822 men and women. By the end of 1944 the number had fallen to 1,383. Over 200 R.C.H. employees had joined H.M. Forces or the Civil Defence Services and a considerable number of the older men had retired. Staff which became spare was transferred temporarily to the railway companies without loss of pay or status. In September, 1939, the administrative and secretarial staff was transferred to emergency headquarters in the Amersham district of Buckinghamshire, while the staff of the traffic department was divided between temporary offices at Whetstone (Middlesex) and Horley (Surrey). As sufficient accommodation was not available at Amersham for all R.C.H. meetings, the L.M.S.R. Company allowed the great majority of the R.E.C. and R.C.H. committees to use some of the spacious rooms in its Euston headquarters offices. A small R.C.H. secretarial staff was also housed at Euston to ensure that minutes of meetings were circulated with despatch.

On January 2, 1942, the R.C.H. celebrated the centenary of its founding. The occasion was marked by a simple ceremony in the Stephenson Rooms at the Euston Hotel, when Sir Francis H. Dent, C.V.O., Chairman of the R.C.H., presided. When the history of the Clearing House comes to be written, it will give an account of useful work done, unostentatiously but most efficiently, both in peace and during two world wars.

CHAPTER 8

AIR RAID PRECAUTIONS

AS soon as the risk of this country being involved in another Continental war became evident, the Government had perforce to consider the difficult subject of air raid precautions. It seemed probable that the enemy would regard railways as a profitable object for attack, and any prolonged interruption to their services would obviously be a serious handicap to our war effort. The Railway Technical Committee was therefore appointed in 1937, to report upon the measures which should be taken to protect the lines and keep traffic moving during emergencies. As will be seen from the list of members in Appendix 4, the Home Office and the Ministry of Transport were represented on the committee, as well as the main-line railways and L.P.T.B., which had to solve a number of problems peculiar to the London tube railways. The committee handled its wide remit with commendable dispatch and submitted definite proposals in June, 1938. Its recommendations fell under five heads :—

(1) Protection of the staff ;
(2) Protection of administrative centres and other vital points ;
(3) Provision of stocks of material for emergency repairs ;
(4) Provision of additional equipment ; and
(5) Lighting restrictions.

The action which the committee thought desirable in each case is stated in general terms below, together with an estimate of the cost of carrying out the proposed works.

(1) *Protection of the Staff*

It was found that an average expenditure of £3 a head would have to be incurred in providing shelter accommodation for the staff of the main-line companies. The kind of shelter necessarily varied with local conditions, but standard types were approved by the Government representatives, and the sum of £3 a head covered the cost of extra protection required at vital marshalling yards and locomotive depots, as well as at important passenger and goods stations. For the L.P.T.B. staff, who are all employed within the highly vulnerable London area, an allowance of £3 10s. a head was considered to be the lowest figure at which shelter could be furnished. The total estimated cost thus became £1,760,900.

(2) *Protection of Administrative Centres and other Vital Points*

In view of the importance of the train and traffic control organisations of the railways, the committee recommended that duplicate skeleton facilities should be got ready for most of the headquarters and district controls. A few schemes involved the transfer of the control staff to fresh quarters in safe surroundings for the period of the war. Special regard was also paid to the location of telephone exchanges, which are generally housed on the top floor of administrative offices. These items, including the cost of equipment, were estimated to cost £734,800.

The committee next endorsed proposals from the Signal Engineers for dealing with signalboxes. Protection was thought to be justified only for important boxes inside vulnerable areas. There was no alternative but to rebuild four or five boxes of light overline type, which were especially liable to damage, at a cost of £108,600. The cost of protecting ordinary boxes worked out at £3 a lever for a box of brick or concrete construction and £8 6s. a lever for one built entirely of wood. The complete estimate under this sub-head thus became £523,400.

The position at power-stations and sub-stations was also examined by the Electrical Engineers, in consultation with the Home Office, and suggestions were framed for protection of the staff and equipment at a cost of £317,000. The L.P.T.B. was responsible for a large share of this expenditure, owing to the special precautions needed at its Lots Road, Greenwich, and Neasden power houses, where the control rooms were duplicated. The estimate also covered tram and trolleybus sub-stations, as well as railway sub-stations.

The gross cost of protection under head (2)—£1,575,200— was moderate in relation to the large number of critical points taken into account.

(3) *Provision of Stocks of Material for Emergency Repairs*

The Civil Engineers of the main-line companies budgetted for three months' additional reserves of permanent way materials, timber baulks, and strut joists for the repair or replacement of bridges. The L.P.T.B. made a rather more liberal provision, as it feared extensive damage in its area. In view of the difficulty of obtaining signal and telegraph stores at short notice, it was thought wise to have reserves based on 12 months' normal consumption of these articles. The Mechanical Engineers decided to bring the stock of locomotive spare parts up to three months' supply, where

necessary, but had ample stocks of timber on hand. The cost of these proposals is tabulated below:—

Civil Engineers' material	£428,000
Signal & Telegraph stores	791,300
Chief Mechanical Engineers' requirements	146,000
Total	£1,365,300

(4) *Provision of additional Equipment*

The Committee considered that more crane power was an essential requirement for clearing the lines quickly and carrying out reconstruction work. It therefore recommended the supply of 24 steam breakdown cranes of 35-ton capacity, for distribution among the companies and the Board. The cost was estimated at £240,000. It was also proposed to spend a further sum of £10,000 for extra welding and burning plant. Another item of £25,000 was included in the budget for emergency telephone connections with General Post Office circuits. The idea was that, as far as practicable, there should be a general pool of all breakdown equipment among the companies and the Board. This proposal was approved, but only 12 breakdown cranes were purchased.

(5) *Lighting Restrictions*

A separate committee was set up in July, 1937, to examine the extent to which it would be possible to restrict lighting in time of war, without undue interference with essential night working. The list of members given in Appendix 5 includes representatives of the Ministries of Home Affairs, Transport, and Air. In conjunction with these Ministries, the committee arranged several special tests and also co-operated in a number of experimental black-outs. With the result of these trials as a guide, the committee was satisfied that, if essential services were to be operated with reasonable speed and safety, a complete black-out was not practicable, though at some places external lighting might be dispensed with altogether. It recommended a specification for lighting at passenger stations and yards, set out in Appendix 6, and known as "Category B (Fully restricted)." This standard had the advantage that it was not necessary to extinguish the lights on an air-raid warning, but the amount of light was insufficient for large passenger stations, marshalling yards, motive power depots, and goods warehouses, where speedy and safe operation was important. A higher standard, known as "Category C (Exempted)" was therefore devised to give an intensity of 0·2 ft. candles on ground level. The lamps were screened, so that they did not show any light above the horizontal plane, but this illumination could be seen from the air at a distance of 12 miles, and the lamps had to

be extinguished immediately on receipt of a warning. This was arranged by grouping the lighting switches at each place into a single control point. Every installation of Category C lighting was submitted to the Ministry of Home Security for approval.

The Lighting Committee also settled a specification for train lighting, which is set out in Appendix 7. It further recommended that a degree of lighting slightly above Category B standard should be allowed in signalboxes, provided that no direct beam was shown above the horizontal, or on any part of an unscreened window. The committee found that, apart from colour-light signals, signal lights were not sufficiently visible to be of assistance to enemy aircraft, and considered that hooding was not required. It did, however, recommend that the hoods of searchlight and multiple-lens colour-light signals should be extended to a length of two feet. It also proposed that steam locomotives should be hooded over the top and around the sides of the cab. The committee failed to devise any method of eliminating the effect of electric arcing, and did not think it necessary to interfere with train head lamps and tail lights, though it recommended that the illuminated panel train indicators on electric stock should be reduced in intensity. The cost of the whole of these proposals in regard to lighting was estimated to be in the neighbourhood of £250,000.

The gross cost of the whole of the Railway Technical Committee's proposals was estimated to be £5,226,400, and it remained for the Government to decide the amount of the grant which it would make towards this expenditure. After a meeting with the Chairmen and General Managers of the main-line companies on December 30, 1938, the Minister of Transport indicated that the railway companies would be expected to carry out "good employer" precautions at their own cost, as there would be general legislation imposing compulsion in this respect on all employers. The Government would defray the whole cost of other agreed precautionary measures up to an amount of £4,000,000, subject to certain conditions as detailed in Appendix 8. Out of this grant, £750,000 was allotted to the L.P.T.B., and orders were placed for the stocks of material and additional equipment required for emergency purposes. The balance of £3,250,000 was allocated between the main-line companies, as shown in Appendix 9.

Emergency Lighting in Practice

In August, 1939, the Ministry of Transport requested the railway companies and London Transport to be ready to put the lighting restrictions into force at short notice, and on September 1 the Secretary of State for Home Affairs issued an order making them

effective. So many difficulties quickly arose that in December, 1939, the Minister of Transport set up a new sub-committee to deal with questions relating to railway lighting. The chairman of the sub-committee was originally Sir Reginald Hill and later Lt.-Colonel Sir Alan Mount. The Railway Executive Committee was represented by Mr. V. M. Barrington-Ward and Mr. M. G. Bennett, while Mr. E. T. Brook spoke for the L.P.T.B. Officials from the Ministry of Home Security and the Air Ministry also attended. Through the medium of this sub-committee, improved standards of lighting were authorised, as time went on, for passenger stations, work benches in motive power and electric car sheds, marshalling yards, locomotive depots, and shunting humps, where peculiar difficulties were experienced. The poor train lighting brought so many complaints from the travelling public that it was thought politic to adopt a new system, which would permit passengers to read. Each company was left to make its own arrangements, subject to the approval of the Ministries of Transport and Home Security, but it was stipulated that :—

(*a*) no direct light was to be thrown outside compartments ;

(*b*) blinds were to be drawn during black-out hours ; and

(*c*) lights were to be extinguished on receipt of an air-raid warning.

On many suburban trains an ingenious form of strip lighting was adopted. This consisted of a central white light, encased in a metal or wooden box with two narrow slits, which threw a beam about 8 inches wide on each seat in the compartment, and so made reading possible. With this form of lighting, there was no need to draw blinds during the black-out period, but the lights were extinguished during an air-raid alarm. On long-distance trains, composed of coaches with end-doors, it was found possible to restore full-lighting—to the gratification of regular travellers—by installing suitable blinds and curtains.

The year 1944 was well advanced before the railways obtained any general relaxation of lighting restrictions. After a great deal of pressure, the Ministry of Home Security agreed to a fairly wide extension of 0·7 f.c. lighting at marshalling yards and engine sheds in the area north and west of a line drawn from St. David's Head through Gloucester, Bletchley, Goole, and Falkirk, to Dingwall. In September, 1944, the railways were authorised to advance the standard of lighting in all marshalling yards, motive power depots, goods stations, and docks from Category " C " to 1·0 f.c. The same standard was allowed at the main London passenger stations, and at large provincial stations, provided that the roofs were

substantially opaque and that the stations were outside the vulnerable zone, which stretched from Lincoln to Hampshire, and also included some coastal districts. In the vulnerable region, no higher degree of lighting than Category " C " was allowed, and that was limited to the larger stations.

About the same time, normal lighting was restored in all trains fitted with blinds and curtains. In trains fitted with strip lighting, the railways were allowed to remove the strip between the lighting slots at the bottom of the box shades. In December, 1944, the Ministry of Home Security agreed to normal lighting of headlamps, and route and destination indicators on electric trains, and to the retention of electric tail lamps during air raid warnings. Full lighting was permitted after dark in colour-light signals, provided that hoods were retained, and electrically-lit semaphore signals, the intensity of which had been reduced to the level of oil-lit signals, could be made six times as bright. Side screens were no longer required on locomotive cabs, but top screens remained in use for six months longer. Gradually the regulations in regard to the black-out of roofs and skylights were relaxed, and finally, on April 19, 1945, the Ministry of Home Security announced that normal lighting could be reinstated throughout the country, except in coastal areas. Five days later, the Ministry of War Transport informed the R.E.C. that the announcement applied to the railways, and on May 11 the coastal belt was also freed from restrictions.

It will be gathered that the subject of lighting restrictions was beset with complications at every turn. An immense amount of work fell upon the railway staff, who had to make detailed arrangements, and was performed quickly and effectively. The officers concerned with lighting were engaged almost continuously in handling a variety of fresh technical problems. It was largely through their skill and persistence that the Government was induced to modify the original lighting code to such an extent that the railways were able to operate record wartime traffics. As an example of the curious questions which arose, we may refer to the smoke screens thrown over London Docks by the Anti-Aircraft Command, at intervals between April and September, 1944, to conceal preparations for the invasion of France. One screen extended from London Bridge to Barking and Woolwich, while another covered Tilbury Docks. The generators released dense smoke, but tests showed that, although a thick fog was created at the producing points, the smoke rose clear of the ground within 200 yards. It was therefore necessary to lay down rules for calling out fogmen only when atmospheric conditions were abnormal.

Extended Programme of Protection Measures

By September, 1940, the General Managers and the Chairman of the L.P.T.B. were convinced that the original programme of air raid precautions was inadequate. The situation had been transformed by the widespread air raids, which began in the summer of 1940, and made every industrial centre liable to attack. The railway members of the Railway Technical Committee were requested to examine the whole problem afresh in the light of these altered circumstances. Their report, received in March, 1941, recommended an expenditure of £6,154,200 on additional protective measures. Details of these new proposals will be found in Appendix 10, which shows that the original estimates were substantially increased and also that expenditure was proposed under a number of new heads :—

(6) Protective equipment for staff ;
(7) Air raid spotters, equipment and shelter ;
(8) Cleaning, decontamination, rescue, demolition, and breakdown squads ;
(9) Fire fighting ;
(10) Removal or protection of glass at stations and other buildings ;
(11) Movement of trains through gassed areas ; and
(12) Alternative electricity supplies.

In the case of each of the 12 items reported upon, it was considered that immediate steps would have to be taken to maintain movement on the railways during hostile air raids. The need for affording every possible protection to the staff was of paramount importance, and, as the enemy was known to be manufacturing poisonous gas, precautions had to be taken to counteract its effects. Again, the Home Office had taken the line that the companies would be expected to make provision against fire, but incendiary bomb attacks called for the provision of extensive fire fighting equipment beyond the obligations imposed by the Civil Defence Act. The removal or protection of glass in station and workshop roofs was necessary for the safety of the public and the railway staff. There could be no two opinions about the need for maintaining electrical power supplies, either by interconnection of alternative sources or by providing standby emergency plant. A cost of £408,736 was remarkably small for the whole of the railway systems in the country.

The report was a comprehensive review of the situation, but, while it was being prepared, the Government had decided upon a complete change in the method of treating war damage, as explained in Chapter 4. The conditions attached to the original grant of £4,000,000 were accordingly modified and extended, as shown in Appendix "D" to the Railway Control Agreement. The

Minister of War Transport did not authorise any fresh A.R.P. expenditure in the aggregate, but required the companies and the Board to obtain prior approval for any measure estimated to cost £1,000 or more. The new arrangements worked smoothly and there was little loss of time in carrying out essential precautionary plans.

At more than one stage of the war, the Government laid great stress on the need for protection against gas attack. The chief fear was that the enemy might use mustard gas and other types of liquid blister gas. After much research and experiment, detailed instructions were issued to the staff for the reporting of gas attacks and the movement of trains in gassed areas. Detector paint was applied to the outside of locomotive cab windows and to front windows of electric motor coaches. The reaction of the paint would have given a visual indication to the driver of the presence of liquid blister gas. Any train affected on the main-line railways was to continue on its journey, but the driver was to warn the next signalman by whistling continuously as the train passed his box. The signalman, in turn, was to advise the next stopping place, so that the staff there could deal with the contaminated train in the manner prescribed to protect the public and the railwaymen. Protective equipment, to enable the staff to deal with traffic affected by gas, was issued to goods and passenger stations, marshalling yards, motive power depots, signal boxes, and, in liberal quantities, to dock undertakings.

In 1943, a special procedure was laid down for the repair of permanent way, signalling plant, and telegraph apparatus damaged by bombing, and also contaminated by liquid blister gas. The directions were based upon experiments made on a disused L.M.S.R. branch line, in collaboration with the Chemical Defence Research Department of the Ministry of Supply, and the Royal Engineers. A crater was blown in the track to represent damage by a H.E. bomb, and the whole site was contaminated with liquid blister gas. Repairs were then carried out by staffs of the Engineering and Signal & Telegraph Departments, which were brought to the scene in a train suitably equipped for the purpose. The experiment was completed without a mishap of any kind and an independent organisation was based on its results. The L.M.S.R. fitted up 10 A.R.P. unit trains, in which cleansing coaches and messing and stores coaches were included, and stationed them at centres ranging from Watford to Perth. Attached to each train were specially-trained squads consisting of 60 permanent way men, and 40 signal & telegraph men, for whom protective clothing was carried. Precise instructions about the arrangements to be made on board the train, and on arrival at the site, filled a booklet of 24 pages.

The other companies were equally well-prepared to deal with the clearance of obstructions in a gassed area. On the Great Western, for example, four "anti-gas" trains were equipped and stabled at West Drayton, Taunton, Saltash, and Weston-super-Mare. The railways were thus competent to deal with gas attacks if they had materialised. Up to the time of the invasion of North-West Europe, the Government thought that the enemy might use gas in a despairing effort to thwart our military plans, but nothing happened, and a gradual relaxation of air raid precautions was possible after November, 1944.

By the end of 1944, the total expenditure on A.R.P. amounted to £11,590,000, made up as follows :—

	£
G.W.R.	1,851,000
L.M.S.R.	3,740,000
L.N.E.R.	2,691,000
S.R.	1,343,000
L.P.T.B.	1,965,000
Total	£11,590,000

It is not suprising that the amount spent exceeded the railway companies' estimate by 14 per cent. Unforeseen contingencies were bound to cause additional expenditure as air warfare developed in different directions, and there was a tendency for the costs of some classes of work to rise above the level at the beginning of 1941. A substantial expenditure on the maintenance of A.R.P. works and services, such as fire-watching, accumulated from day to day and amounted, by the close of 1944, to over £10,000,000, as shown below :—

	£
G.W.R.	2,100,000
L.M.S.R.	2,367,000
L.N.E.R.	2,434,000
S.R.	1,437,000
L.P.T.B.	1,801,000
Total	£10,139,000

The whole of the expenditure was fully justified by the confidence which the precautionary measures gave to the staff in performing their duties under conditions which would have been intolerable in the absence of adequate protection. In addition, the A.R.P. arrangements reduced the extent of the damage to railway property, and enabled the engineers to carry out emergency repairs promptly, so that services were kept going in a manner that otherwise would have been impracticable.

CHAPTER 9

Effects of Aerial Warfare on Railway Operations

AIR Raid Precautions would have been of little avail without adequate arrangements for warning people that hostile aircraft were approaching. The Government therefore set up machinery for circulating air raid messages through the Post Office telephone system to areas likely to be affected by threatened attacks. For this purpose, the country was divided into nearly 150 areas, and originally four signals were sent—

Air Raid Message " Yellow "	: Preliminary caution.
" " " " White "	: Cancel caution.
" " Warning " Red "	: Action warning.
" " Message " Green "	: Raiders passed.

In July, 1940, a new signal " Purple " was introduced to give a lights warning to railways and other authorities which were permitted to use Category " C " lighting. On receipt of the " Purple " message, all lighting of that standard, and all flares used for repair work, had to be extinguished. The " Red " warning followed if Fighter Command had reason to expect a serious attack on that particular area. These adjustments lessened the stoppages in railway movement during " alerts " to an appreciable extent. The " Yellow " message was discontinued as superfluous in October, 1941, and the only other change of consequence in the air raid warning system took place when flying bombs were directed against South-Eastern England, and especially the Greater London area, in June, 1944. The procedure adopted in that region ensured that on receipt of a " Red " warning lights were not extinguished, as flying bombs only were on the way, whereas a " Purple " warning meant that piloted aircraft were up, and all " exempted " lighting, except in screened premises, was switched out. As the " Red " signals outnumbered the " Purple " warnings, a good deal of time was saved in conducting railway operations.

In 1940, the Government intimated that the " Red " warning should be regarded as an " alert " only, and not as a signal to take cover. It also advocated the appointment of roof spotters at industrial premises to give an " imminent danger " signal on the approach of hostile aircraft. The railways appointed spotters at suitable premises, when the staff favoured the arrangement, and

in some cases established connections with the Royal Observer Corps. The industrial alarm system was developed intensively in the London Region in order to give " imminent danger " signals when aircraft were 15 miles off. When flying bombs were launched against Southern England, steps were taken to extend the danger warning to the main passenger and goods stations and motive power depots in the London area. In addition, the warning was transmitted to signal boxes in the area by a bell code on the telephone or block circuits. The " imminent danger " signal had the advantage of letting the staff ignore the " Red " warning and work in comparative safety until it was essential for them to take shelter.

The first instructions for the working of trains during air raids laid down that, on receipt of a warning, passenger trains should be stopped at the first station, where passengers could alight if they chose, and should then proceed at a speed of not more that 15 miles an hour. Freight trains were stopped at the first signal box and the drivers warned to proceed at a speed not exceeding 10 miles an hour. When air raid warnings became frequent, these instructions slowed down movement disastrously and were modified in November, 1940, to allow passenger trains, and braked freight trains, to run at 25 miles an hour in daylight, while unbraked freight trains might move at 15 miles an hour during both day and night warnings. Greater latitude still was approved by the Ministry of Transport in February, 1941. In daylight, all classes of trains were allowed to run at normal speeds during air raids and the practice of informing engine-drivers of " Red " warnings was dropped. During black-out periods, all trains were stopped, and their drivers were instructed to go forward at a speed of not more than 30 miles an hour. As a safeguard in case of damage to the permanent way, it was enacted, in 1943, that when signalling apparatus failed during a raid in black-out hours, fog, or falling snow, no engine was to be allowed to enter the section concerned, in either direction, until the line had been examined and reported safe for the passage of trains. In June, 1944, it was thought desirable to advise train crews, who were either in the London area, or on the point of entering it, when flying bomb attacks were in progress. This was done by exhibiting at signal boxes during " alerts " boards painted white with a large black arrow pointing upwards. In December of the same year, the Ministry of Home Security agreed to the retention of train lighting during " alerts," but the arrangements for reducing speed to 30 miles an hour remained in force.

The warning system has been explained in some detail because its working had a great influence on railway movement during the

war. The number of warnings issued fluctuated sharply from time to time, and from one region to another. In the Central London area, warnings were received on 101 consecutive days from August 23, to December 1, 1940. The largest number of "Red" signals on any one day was 23, on August 3, 1944. Perhaps the Folkestone district had as many alerts as any part of the country and, as a matter of interest, the records for the two areas are reproduced in the table below.

Number of "Red" Warnings.

Year	*Central London Area*	*Folkestone District*
1939	3	1
1940	414	530
1941	156	864
1942	25	606
1943	95	475
1944	511	162
1945	23	5
Total ..	1,227	2,643

The last warnings to be given in this country were received at Aberdeen and Forfar on the afternoon of April 30, 1945. Two days later the Government made an end of the entire warning system.

Although air raids happened regularly from June, 1940, onwards, they were of varying intensity and duration. The worst attacks came between August, 1940, and June, 1941. After that period, raids were, generally speaking, rather spasmodic, but many of them were directed against railway stations and trains. Low-level attacks caused casualties among train crews and passengers, but railwaymen were not deterred from carrying out their rostered duties. Coastal districts were naturally open to these nuisance raids, above all on dull, cloudy days. The Kent coast from Ramsgate to Folkestone was also subject to shelling by German long-range guns on the other side of the Straits. Between August, 1940, and September, 1944, over 2,000 shells fell in Kent. Dover Priory Station, and the Dover locomotive shed, were damaged on several occasions, and frequently it was necessary to divert trains out of that area or to detain them in tunnels until firing ceased.

The operating officers of the railways were kept busy collecting details of air raid damage, and advising not only their own headquarters and the R.E.C., but also the Regional and civil authorities in cases where these outside agencies were concerned. A persistent source of trouble was the falling of unexploded bombs and parachute mines on railway property, or so close to the lines that movement had to be stopped until the damage was assessed. An organisation was evolved for reporting the presence of unexploded

bombs to the Regional Commissioners, whose Bomb Disposal Officers were responsible for removing the infernal machines. The Admiralty dealt with unexploded parachute mines and were advised direct whenever one was discovered. These mines were considered dangerous if they were within 400 yards of the railway, and traffic ceased until an Admiralty representative said that trains could be run in safety. Special instructions were also issued to the staff about the methods of dealing with obstructions to the railway lines, caused by drifting barrage balloons and crashing aircraft. Mishaps of such a nature were numerous and sometimes led to lengthy interruptions of train services, as well as damaging the track or telegraph and telephone wires. To quote one instance, the working of London Road Station, Manchester, was upset for 12 hours on the night of April 9, 1942, by a stray balloon, which was eventually shot down by the R.A.F.

In one way and another, air warfare caused a great waste of manpower on the railways and reduced the amount of effective work done by locomotives, road vehicles, and mechanical appliances. Trainmen were on duty for exceptionally long hours when traffic operations could not proceed according to the regular programmes. The interference with the turnover of wagons in shunting yards and in goods warehouses was equally serious. In a typical yard, handling 500 wagons during an undisturbed night shift, only 340 wagons were shunted when a " Red " warning was in force the whole time, with moderate A.A. gunfire. On a third night, when the defensive gunfire was very heavy, the number of wagons shunted fell to 150. The loss of effective work on the first night was over 30 per cent. and on the second 70 per cent. Of course, the inability of one yard to turn over the normal number of wagons reacted on the state of other yards and on train running.

When interruptions to railway movement followed hot foot on one another, their effects became cumulative, until distant traffic centres felt the dislocation. The London area had many trying experiences, due both to raids by piloted aircraft, which were dangerous and destructive during the first quarter of 1944, and to attacks by flying bombs and rockets after June, 1944. The flying missiles came over at short intervals by day and night. On August 24, 1944, the railways received 13 " imminent danger " warnings in three and a half hours between 5.45 p.m. and 9.15 p.m., the peak time of the day for forwarding goods from London. In a period of 12 weeks ended September 3, 1944, " Red " warnings in Central London extended over 646 hours, or nearly one third of the total time. In the worst week, ended July 9, 1944, " alerts " were in force for 98 hours, or nearly 60 per cent. of the time, and during

such periods restrictions were placed on the forwarding of certain traffics to London goods depots. A fresh source of disturbance arose in September, 1944, when rocket bombs began to fall, without a warning of any kind. In all, the railways recorded 1,432 incidents as due to flying bombs and rockets. Direct hits were made on railway property in 102 cases—74 by flying bombs, and 28 by rockets. It is creditable to the railway staff of all grades that there were few absentees during these disquieting events and traffic was never brought to a standstill for any length of time.

During the five and a half years of aerial warfare, the railways reported more than 9,000 cases of damage and delay. An analysis of these reports will be found on page 58. It shows that 3,600 incidents interfered but slightly with traffic facilities, leaving 5,600 cases where damage or delay of some consequence took place. In nearly 250 cases, working arrangements were affected for more than a week. The enemy destroyed 8 locomotives and damaged 484. The number of passenger vehicles demolished was 637 and no fewer than 13,487 were damaged. Freight rolling stock also suffered severely; 2,685 railway-owned wagons were reduced to scrap and 16,232 required repair. The corresponding figures for requisitioned wagons were 636 and 4,062 respectively.

The destruction of railway assets was serious enough, but was probably not so extensive as the German High Command hoped to effect. Unhappily, the attacks on the main-line railways and the L.P.T.B. lines killed 900 people, and injured 4,450. These totals include 395 railwaymen killed, and 2,444 injured. The heaviest roll of casualties was on the Southern Railway—300 killed, and 1,672 injured. On the L.P.T.B. lines, 225 people lost their lives, compared with 170 on the L.N.E.R., 126 on the G.W.R., and 72 on the L.M.S.R. Regrettably high as these losses were, the railways may be regarded as fortunate in escaping any serious disaster during a period of prolonged anxiety for the safety of their passengers and employees.

ANALYSIS OF REPORTS BY THE RAILWAYS OF DAMAGE AND DELAY CAUSED BY ENEMY ACTION DURING THE YEARS 1940—1945 INCLUSIVE

(NOTE—The *first incident recorded* occurred on June 19, 1940, and the last on March 27, 194 ,

	1940	1941	1942	1943	1944	1945	Incidents
1. Having little or no effect on facilities	1,238	825	196	163	1,072	124	3,618
2. Causing failure of telephonic or telegraphic communications alone	274	127	28	35	62	2	528
3. Affecting traffic facilities for not more than 6 hours	604	279	49	17	153	30	1,132
4. Do. do. do. 24 hours	813	443	79	68	164	28	1,595
5. Do. do. do. 1 week	316	263	16	17	43	7	662
6. Affecting traffic facilities for more than 1 week ..	125	94	14	1	11	2	247
7. Traffic facilities affected by damage and presence of unexploded and/or delayed action bombs ..	179	103	6	2	2	—	292
8. Facilities affected by unexploded bombs (delay only)	669	264	68	90	74	—	1,165
TOTAL	4,218	2,398	456	393	1,581	193	9,239

CHAPTER 10

Wartime Passenger Train Services

DURING the first world war, passenger train services were gradually curtailed, as the pressure of Government and other essential traffic became more intense, until only an attenuated timetable remained in force in the spring of 1918. On the outbreak of the second great war, the R.E.C. thought that a different course should be followed. The Committee feared that transport would be dislocated seriously by air raids in the early days of the war and had therefore arranged for the preparation of emergency timetables, which provided skeleton services sufficent to keep some movement alive under working conditions of dire difficulty. These timetables reduced most of the weekday main-line services to the level of the pre-war Sunday services and limited start-to-stop speeds to 45 miles an hour, with a maximum of 60 miles an hour between stations. On September 4, 1939, the R.E.C. decided that the L.M.S.R., L.N.E.R., and S.R. emergency timetables should be introduced on September 11. On the G.W.R. the change was to take effect a week later, and the L.P.T.B. was left free to make its own arrangements. Unfortunately there was no time to give the public adequate warnings of these sweeping cuts in travelling facilities. On Monday, September 11, railway passengers were faced with a notice issued by the R.E.C., which read :—

Notice is hereby given

that, due to the National Emergency, the following alterations in passenger train travel, as applying to the railways in Great Britain, will come into force on and from Monday, September 11, 1939 :—

1. *Passenger Train Services*
   The passenger train services will be considerably curtailed and decelerated. For details see the company's notices.
2. *Cancellation of Reduced Fare Facilities*
   Excursion and reduced fare facilities (except monthly return, week-end, and workmen's tickets) will be discontinued until further notice.
3. *Season and Trader's Tickets*
   Season and traders' tickets will continue to be issued.
4. *Reservation of Seats, Compartments, etc.*
   The reservation of seats and compartments, and saloons for private parties will be discontinued.
5. *Restaurant Cars and Sleeping Cars*
   Restaurant car facilities will be withdrawn, and only a very limited number of sleeping cars will be available.

Time sheets showing the new train arrangenents were exhibited at stations as quickly as possible, but in spite of every effort on the part of the railway companies, the public were subjected to much inconvenience and discomfort. A few days' experience proved that the services would have to be augmented in order to cope with essential travel, and, as the fears of enemy action turned out to be mistaken, the companies put on a considerable number of trains by the end of September, but on the whole train services in October, 1939, were less frequent and slower than the services run by the old constituent companies, after 4 years of war, in October, 1918. Oddly enough, the periodical issue of *Bradshaw* began in October, 1839, and the centenary month was signalised by the use of sections of the *Guide* as the Southern, L.N.E.R., and L.M.S.R. official timetables. The Great Western preferred to continue to print its timetable in the usual style. These timetables were in turn revised immediately, as the companies were able to restore many of the long-distance services that had been withdrawn. The R.E.C. decided that the start-to-stop speed might be increased from 45 to 50 miles an hour, though the maximum speed remained at 60 miles an hour, and also authorised the reinstatement of restaurant car facilities on a number of trains from October 16, 1939. On the L.N.E.R., an improved timetable took effect on December 4, 1939. The L.M.S.R. and S.R. brought new schedules into operation on January 1, 1940, while the G.W.R. introduced its changes on February 5, 1940.

Speaking broadly, the timetables brought into force at the beginning of 1940 represented a worsening by at least 25 per cent. of the services run during the winter of 1938. The heaviest reductions were made on the L.M.S.R. and L.N.E.R. The northern systems were moving many train loads of Government traffic over long distances, and there had scarcely been time for the amended passenger services to settle down before large quantities of coal from the coalfields of Northumberland, Durham, and the Midlands were diverted from water to rail transport. The Government wished priority to be given to the working of coal supplies to consuming places in the southern and western regions of the country. This could only be arranged by relieving the lines of a number of passenger trains and the R.E.C. accordingly issued a notice in the terms quoted below :—

Passenger Train Services

In order to meet urgent requirements for the conveyance of additional coal traffic, the L.M.S. and L.N.E. Railways regret that it is necessary to suspend until further notice the running of various passenger trains on lines where it is essential that relief should be afforded.

Particulars of the services which will be withdrawn or altered on and from Monday, February 26, are given in separate notices.

It is not expected that any curtailment of London Suburban Services will be necessary at present.

The principal reduction was made in the L.N.E.R. services between Kings Cross and Newcastle and Scotland. The mid-day trains were taken off. Restaurant cars were at the same time withdrawn and the number of sleeping cars was curtailed. The number of ordinary coaches on the morning and evening trains was thus increased, but it was impossible to avoid serious overcrowding and discomfort on the long journeys to and from the north country.

In May, 1940, the war had reached a critical stage. The R.E.C. therefore decided that summer timetables should not be issued, but that the companies should each arrange such relief services as might be necessary. Additional trains were, for instance, run to west coast resorts at weekends for holiday-makers, but the main structure of the timetable was kept intact, and formed the basis of the winter timetables published in October, 1940. In these schedules, the practice was introduced of stopping long-distance expresses to and from London at outer suburban stations, such as Watford, Harrow, and Woking, so that passengers could avoid the risk of using the main terminal stations. This new facility was extensively used, but did not give appreciable relief to the overcrowded suburban services. Numerous complaints were made by regular passengers about the discomfort they experienced in travelling to and from work, and, as a wartime measure, the Government decided that, as from October 6, 1941, all trains starting and finishing their journeys within the London Passenger Transport Area should become " third class only ". The change was made without friction, but the Ministry of War Transport rejected various suggestions from outside sources that first class accommodation should be abolished on main-line trains also.

In 1941 some revision was made in passenger services, with the object of releasing locomotives and train crews for freight working. Towards the close of the year, the number of sleeping cars was reduced and the Ministry of War Transport arranged to allot a large proportion of the berths which were left to people travelling on business of national importance. This was the first instance of the direct intervention of a Government department in railway business, but the arrangement had the advantage of freeing the companies from the thankless task of settling the order of priority in which berths were to be allocated amongst a crowd of applicants. A further reduction in special facilities came in May, 1942, when restaurant cars were withdrawn from all but 72 trains. Some saving in engine power and in staff resulted, and a few more ordinary

coaches could be run on certain services. Two years later, the need for operating economies became more pressing, as room was required on the lines for train movements leading up to the landings of the British and American armies in Normandy. Instructions had been given to withdraw all restaurant cars during the holiday period at Easter, 1944, and the Ministry of War Transport decided that they should not be put back into service. After April 5, 1944, passengers could not enjoy the convenience of using a travelling restaurant on any train, but at busy centres the facilities for supplying refreshments were improved, while canteens catered for members of the Forces and for merchant seamen.

During 1943, the L.N.E.R. was not called upon to work a very large number of " convoy " coal trains, and was able to strengthen its East Coast passenger services. When that change was made, the timetables of all companies practically settled into a permanent wartime shape. Appendix 11 analyses three important services for each company, as run in October, 1918, in October, 1938, and at four periods during the war. The comparison of the journey times, and of the frequency of service, shows that in the autumn of 1943 the railways were providing better facilities than they were able to give towards the close of the last war. In 1943 a reasonable standard of punctuality was maintained during the summer months, but, when the hours of daylight lessened, a good deal of time was lost both in running and at stations, where black-out conditions hampered the staff in dealing with long and overcrowded trains, which had frequently to be drawn up twice at the platforms. Loudspeakers were installed on a fairly liberal scale at Junctions, as well as at terminal points, and proved useful as a means of directing passengers to their trains. As the war progressed, the travelling public came to appreciate the handicaps under which the railways were carrying on, and did not trouble the companies with trifling complaints.

At an early stage in the war, the Government considered the question of easing the strain on the railways by introducing a travel permit system, which would require every person desiring to make a journey of 50 miles or more to obtain a voucher from an official agency before he could purchase a ticket. The Minister of War Transport ruled out the proposal, mainly on account of administrative difficulties, and preferred to rely on a campaign for discouraging travel. This was waged energetically from 1941 onwards by press advertisements, posters, and wireless appeals to the public not to go by rail except in cases of necessity, and to spend holidays near their homes. The Minister of War Transport further directed that during Christmas week, 1941, a greater number of long-distance

passenger trains should not be run on any one day than were worked on an ordinary weekday in winter. Similar directions were issued at subsequent Bank Holiday times, and travelling facilities in the summer holiday season were likewise restricted to the number of trains run during that period of 1941. The last ruling was eventually relaxed somewhat to meet exceptional pressure of traffic on popular routes, but it was impracticable to prevent persistent overcrowding on many main-line services.

Between April and October, 1944, the public were called upon to submit to another curtailment of services. Locomotives and train crews were required for moving men and material in preparation for D-Day, and could be obtained only by reducing the passenger train services. A start was made with a cut of 12,000 train miles a week in April, increased to 60,000 by May 21. On the next day a sweeping reduction of 264,000 train miles a week took effect, and rose to 290,000 in July, as more and more trains were withdrawn. It was soon obvious that the restricted services were quite inadequate for the traffic offering, though some relief trains were run to clear London terminal stations which were exposed to flying bomb perils. When the Ministry of War Transport finally consented to the provision of extra trains, it decided that security might be jeopardised if the railways advertised the additional facilities, and this ruling added to the inconvenience caused to the travelling public at a time when holiday traffic was heavy and was increased by the sudden lifting of the ban upon visits to coastal areas. The Ministry determined that additional trains should not be provided in connection with "Wakes Weeks" or local public holidays, such as the Glasgow Fair period. On the other hand the Ministry authorised the running of 39 special trains for transferred workers travelling to their homes on special vouchers issued by the Ministry of Labour. The volume of Services travel, in spite of restricted leave in some respects, gave rise to working difficulties and could be handled at weekends only by putting on more trains. During the peak period of August Bank Holiday travel, troops on embarkation leave had to be carried, the number of men mounting to 30,000 on the busiest day. In August and September, 1944, special trains were worked from the North of England to London with workers for the repair of bomb damage. Trains were also run to London from places within a radius of 75 miles for building labourers making a daily journey from their homes to bombed sites in the Metropolitan area. This list of exceptional demands upon the railways explains why passenger services on many routes were far below the normal standard of comfort and punctuality in the summer of 1944. The main-line

companies were powerless to remedy the overcrowding which took place regularly on long-distance trains until timetables, brought into force on October 2, 1944, restored the train services to the level observed during the previous winter. In the early months of 1945, the number of passengers originating began to decline slightly, but the trend soon changed. In June, travel was 14 per cent. in excess of the level twelve months before and the July figures were higher by 10 per cent. Throughout the summer of the victory year, the railways had more passengers to carry than they could cater for efficiently with the serviceable rolling stock at their disposal.

It is interesting to find that the United States of America adopted the same policy as Great Britain in dealing with record wartime passenger bookings. In the years between the two world wars the American railways had lost about half of their passenger business to road and air carriers, or to the private motorcar. After Pearl Harbour the traffic came back with a rush, until it reached four times the pre-war volume. Railway facilities soon proved inadequate, but proposals for a permit system were held to be unworkable. Instead, the Director of the Office of Defense Transportation called upon the people to refrain from using the trains save for necessary journeys, and, in particular, urged that public conventions and meetings of associations and societies should be abandoned during the emergency. The Director decided wisely, if one may judge from the experience of Australia, where a permit system for interstate travel was inaugurated in 1942, only to lead to a considerable waste of seating space and sleeping berths. New Zealand also tried a permit scheme, with much the same result.

After the defeat of Germany in the spring of 1945, the main strength of the American armies was diverted from Europe to the Far Eastern theatre of war. As fast as shipping could be supplied, thousands of troops sailed for New York and other ports on the Atlantic coast. Many of the soldiers made three or four journeys by rail to military depots in the States, or on leave, before travelling across America by train to the Pacific coast. The pressure on the western railway routes was so great, and the demand for sleeping cars was so intense, that on July 7, 1945, the Office of Defense Transportation issued an order prohibiting the operation of sleeping cars on any run of 450 miles or less. This action cut out such popular sleeping car services as those between New York and Washington, Pittsburgh, and Boston. About 895 sleeping cars were transferred from civil use to the pool for military movements, which then embraced 5,000 out of a total stock of 7,500 vehicles. The American people were also warned that ordinary passenger

train services might have to be cancelled on a wholesale scale to make room for troop specials, as military movements were expected to reach a peak in the fall of the year, but the Japanese surrender in August averted any extreme curtailment of public timetables.

Many of the difficulties in conducting passenger business in this country were due to the rapid growth of Government service travel. The creation of new departments, such as the Ministry of Food, with large staffs, the temporary expansion of older ministries, and the transfer of many offices from London to provincial centres, all tended to increase the number of railway journeys, but the main source of trouble was the ceaseless movement of members of H.M. Forces. In the month of July, 1942, the number of men or women travelling on duty under Government warrant was 1,816,000. Over 2,000,000 warrants were also issued to members of the Forces going on leave, and over 6,000,000 journeys were made at concession rates by members of the Forces or their dependants. In all, over 10 million journeys were made by people connected with the Forces, and these journeys were of more than average length. Holders of third class warrants travelled 150 miles on an average, at least twice as far as the average civilian rode on a long-distance train. The tax on the resources of the railways became oppressive, and, in response to their representations, the issue of free travel warrants to staff serving in the Army and R.A.F. was limited, and a close check was placed on the use of half-rate tickets. Some restriction was likewise put on free travel for members of the Civil Defence Services, and on special privileges allowed to munition workers who had been transferred from their homes. Had these measures not been taken, the volume of Forces travel would have become overwhelming. As it was, the number of journeys in July, 1943, increased to 15½ millions and was still round about the 15 million mark in July, 1944.

A word must be added about workmen's trains, introduced to serve Royal Ordnance Factories and other concerns engaged in the manufacture of munitions and war implements. These works generally employed three shifts of workpeople on seven days in the week, and drew their labour from fairly wide areas. Special trains were run at times suited to the hours of work, and every effort had to be made to secure punctual arrivals. One factory at Chorley, in Lancashire, required 426 trains weekly to provide 222,500 journeys for the employees. The train service furnished at Tremains, in Glamorgan, and at Swinnerton and Radway Green, in Staffordshire, was nearly as intensive The ordinary passenger train service in the Leeds and Selby district of the L.N.E.R. had to be cut down in order to leave paths for workmen's specials

running to and from a large factory at Thorp Arch, in Yorkshire, and much ingenuity had to be exercised in settling timetables for other war establishments. In addition to the regular services provided for workpeople in normal times, nearly 6,500 workmen's trains were run every week to Government factories. It is gratifying to record that the working of these special services gave satisfaction and was a distinct benefit to the country's war effort. The railway train proved to be eminently suited for the mass movement of workpeople.

With a reduced passenger train service and weakened station staffs, the working of parcels traffic raised quite a crop of problems. During the hours of darkness, the loading and unloading of parcels was slowed down, and trains were apt to lose time at stations. Peacetime arrangements for conveying mails and parcel post had to be modified, and some train timings had to be varied to suit the exceptional conditions in which newspapers were being produced and circulated. To counteract the interference of air raids with cartage through the London streets, fresh methods of interworking by rail between the main-line systems were devised. A constant difficulty was the excessive weight of many packages forwarded by passenger train. Articles weighing from 5 to 10 cwt. were not uncommon and, in extreme cases, consignments up to 2 tons were diverted from goods conveyance. Wartime passenger platform staffs were not constituted to deal with heavy articles, and in 1940 appeals were addressed to the public and to Government departments to limit the weight of packages forwarded by passenger train. As little notice was taken of these representations, the Ministry of War Transport issued the Limitation of Packages by Passenger Train Order, 1942. This Order took effect on February 16, 1942, and enacted that no package exceeding 1 cwt. in weight would be accepted unless prior arrangements had been made with the railway company. Exceptions were allowed in respect of special priority traffic, Government traffic, and essential traffic, with the result that the Order brought little relief to the railways. Most of the heavy articles were passing between Government departments or between contractors engaged on war production, and had to be treated as exceptions to the rule.

In peace time the transport of cut flowers had grown to large dimensions, especially from the West of England and Lincolnshire. The railways catered for this luxury traffic by providing many special trains and vehicles, which could not be furnished in wartime. The Ministry of War Transport therefore issued the Transport of Flowers Direction, 1942, prohibiting, with certain exceptions, the carriage by rail of flowers or plants after the month of October.

The terms of the direction were made more stringent in February, 1943, but in the following month, the Ministry of War Transport decided upon a change in policy, and directed that flowers and plants might be conveyed at such times, and for such distances, as the state of traffic permitted. This compromise assisted the railways, while allowing the growers to dispose of their produce to the public at reasonable prices.

The pressure on the railways was accentuated by continuation of horse racing during the war. The conveyance of racehorses involved the working of empty horseboxes to the training centres and the arrangement of a quick transit for the loaded vehicles. It seemed a waste of energy to run horsebox specials in wartime, and eventually the Ministry of War Transport issued the Transport of Horses Direction (No. 3), 1942, which provided that on and after September 15, 1942, no racehorse would be accepted for conveyance by rail unless the consignor satisfied the railway company that the conveyance was not for the purpose, or in contemplation, of a race-meeting. The Ministry of War Transport modified the restriction in 1943 to permit the carriage by rail of racehorses competing at specified meetings at Newmarket, leaving the railways to work the horseboxes by ordinary service, or by special train, at their discretion. In 1944, racing was permitted on a regional scheme at selected courses, on the understanding that rail transport would not be provided for racehorses and that special facilities would not be arranged for the public. National Hunt meetings were allowed in the winter of 1944/45, subject to the same limitations, and flat racing gradually extended in the following summer, adding inevitably to the pressure on the railways during the holiday season, as was apparent at York, when the St. Leger was run there in September. For such important race gatherings in the summer of 1945 the Ministry of War Transport authorised, through the R.E.C., the running of relief trains to ordinary services, as distinct from race specials in the normal sense of that term. Another form of sport requiring the supply of special facilities was pigeon racing. The Government wished the fanciers to continue to rear trained birds for the Forces, but the number of vans set apart for the carriage of pigeon baskets was approximately halved.

Before the war, there was keen competition between the large fishing ports, such as Aberdeen, Hull, Grimsby, and Fleetwood. The railways assisted the development of the fishing industry by running express services daily from the ports to the principal consuming centres, where the fish arrived in time for early morning market. The annual forwardings were about 430,000 tons, yielding gross receipts, at passenger train rates, of about £1,360,000.

With the coming of war, much of this valuable traffic disappeared, and there was no alternative but to revise the customary methods of distributing the catches landed by the reduced fleet of trawlers. In 1942 the Ministry of Food evolved a scheme for zoning deliveries of white fish, so that each area in Great Britain and Northern Ireland would receive supplies in proportion to its population. The Ministry developed its scheme in conjunction with the railways, on the basis that each zone would draw its supply from the nearest fishing port, as far as practicable. The new system was introduced on October 17, 1942, and was gradually improved, until about 10,000 fish train miles were being saved every week in 1943. This saving was reduced by 15 per cent. in November, 1944, when the zoning arrangements were varied to suit the movements of the fishing fleets. Landings at west coast ports were declining, while large catches from the North Sea were arriving at east coast ports. Hull and Grimsby were thus able to supply places which had been receiving fish from Fleetwood and South Wales ports. This is a sign that markets for fish and other commodities are likely to return to their old locations, as they did after the last war.

CHAPTER 11

Mass Movements of Civilians

IN the first chapter a brief reference was made to the problem of evacuating civilians from the London area when danger threatened. The first tentative scheme, formulated in September, 1938, was never put into force, but the railways, in consultation with the Ministry of Health and other Government departments, developed it into a complete plan, which was ready by July, 1939. This plan, covering 18 hazardous zones, was limited to school children, and selected classes of adults. In London, the programme came into operation on September 1, and was practically completed in four days. During that time 607,635 people were transferred to the reception areas. The L.P.T.B. carried about one third of these passengers by special trains to suburban stations such as Ealing Broadway, Watford, Bowes Park, and Wimbledon, where they joined the main-line trains. In addition the Board transported 345,800 people by road, taking some to railway stations, and conveying others direct to their temporary homes. The provincial programmes were carried through about the same time without causing any serious interference with ordinary traffic. For the whole movement, the railways ran 3,823 special trains carrying 1,334,360 people—less than one half of the number registered for evacuation. Details will be found in the statement at the end of this chapter.

Further movements on a smaller scale took place in May, 1940, when school children were transferred from the eastern and southern counties of England to the west country, Wales and the North Midlands, while parties went from the North-East Coast to West Cumberland. Later in the same year air attacks on the London area started another evacuation, which was hampered by bomb damage to railway property. A curious feature of this movement was the running in September of 15 trains carrying over 8,000 Londoners from the hop-picking districts of Kent direct to reception

areas. In May, 1941, the bombardment of Liverpool from the air led to the transfer of many families to outlying districts. An emergency service was instituted for this purpose, and extra workmen's trains were also scheduled to carry the breadwinners in the families to and from their employment. Similar measures were taken elsewhere as necessity arose, but happily these emergencies became rare after 1941.

Apart from these mass movements, the railways were freely used in the early months of the war for general dispersal purposes. Special trains took the staffs of a few Government offices, the Bank of England, and other large undertakings, with their office files and machinery, to temporary headquarters situated in counties ranging from Hampshire to Lancashire. Art treasures and valuable exhibits from public institutions, such as the National and Tate Galleries, the British Museum, and Westminster Abbey, were removed out of harm's way, and preserved for the delight of future generations. At the same time, the material wellbeing of the nation was safeguarded by transferring 20,750 tons of meat, butter, and other commodities from Port of London warehouses to form reserve stocks at various provincial centres.

In passing it is only fair to mention the immense amount of planning which the railway companies undertook for the Government when invasion seemed a possibility. In 1941 one scheme for evacuating the people from areas on the east and south coasts required timings for nearly 1,000 trains, to carry about 750,000 passengers in four days. A second scheme, known as the Refugee Emergency Service, was designed to cope with an exodus from eastern England, which might conceivably be brought about by enemy action. Fortunately these plans stayed in their pigeonholes, but credit should not be withheld from the staff who thought out the details and worked at high pressure during a time of great anxiety.

The last large scheme of evacuation had to be prepared at short notice in 1944, when the flying bomb attacks on London and South-east England became violent. The movement of mothers and children from the danger zone was planned as before, in consultation with the Ministry of Health and the London County Council. Between July 5 and September 8 special trains to the number of 532 carried 375,300 passengers. While these arrangements were in progress, the Government decided that hospitals in the London area were to be cleared and casualty evacuation trains were used for this purpose.

The table below gives a summary of wartime movements under planned evacuation schemes, after the first great trek of 1939, and

shows that over a million people were conveyed from their homes by rail in the years 1940 to 1945 :—

Planned Evacuation Schemes, 1940 to 1945

Year	*Number of Special Trains*	**Number of Passengers*
1940	805	485,480
1941	291	131,300
1942	8	6,610
1943	—	3,480
1944	576	401,530
1945	122	62,860
Total ..	1,802	1,091,260

*Including those conveyed by ordinary services

Towards the close of 1944, people began to drift back to London. From November 9 onwards schools which had retreated to the country, returned by special trains, and an official scheme for the return of mothers and children started a month later, though it was not completed until August, 1945.

Evacuation of Civil Population in September, 1939

Excluding the large number of empty stock trains required, the number of special trains run from each evacuation zone is given below, together with the number of passengers conveyed :—

Evacuation Zone	*Number of Trains run*	*Number of Passengers conveyed*
London	1,577	617,480
Birmingham	170	46,934
Bradford	96	15,800
Hull	95	24,114
Leeds	98	21,697
Manchester	302	115,779
Medway Towns	54	9,754
Merseyside	382	161,879
Portsmouth, Southampton and Gosport	172	36,917
Runcorn and Widnes	19	10,477
Sheffield	26	3,954
Tees-side	27	11,175
Tyneside	271	73,916
Wearside	34	10,659
Dundee	47	16,872
Edinburgh	129	31,125
Clydebank and Glasgow	322	123,639
Rosyth	2	2,187
Total ..	3,823	1,334,358

CHAPTER 12

Naval, Military, and Air Force Traffic Movements

As soon as war was declared the liaison machinery between the fighting services and the railways was tested to the full. The mobilisation of the Army and the Royal Air Force began on September 2, 1939, in accordance with a programme agreed with the War Office, and was spread over 24 days. On the L.M.S.R. alone, 164 trains were run during that period, no fewer than 26 passing on September 4. It was just as well that the Admiralty had brought the crews of the fleet up to full strength before the outbreak of war, when occasional special trains could be run easily. All planned movements were carried through smoothly enough, but the companies had some trouble in coping with the unregulated travel of the thousands of men called up for the Forces, who were instructed by the Labour Exchanges to report to different depots. For instance on three days, from October 18 to 20, one railway conveyed about 40,000 men to collecting centres and subsequently carried then to training camps. Later on a great deal of intricate work was involved in transferring men from training camps in Great Britain and Northern Ireland to the units to which they had been posted.

In the early days of the war the main interest centred on the despatch of two British Expeditionary Forces. The first contingent consisted of reinforcements to bring Mediterranean and overseas garrisons up to wartime strength, together with officers and civilians occupying key posts, who were returning from leave. The programme for this movement required 22 special trains, mainly from the south and west of England and the Midlands, to arrive at King George V Dock, Glasgow, between September 1 and 3, 1939. The trains, which conveyed about 10,000 passengers, were scheduled to arrive at intervals of not less than 45 minutes and the move was carried through satisfactorily.

The second, and much larger, movement had been the subject of long and careful planning in consultation with the War Office. A complete scheme was worked out for the assembly and transfer to France, through Southampton, of an Expeditionary Force more numerous than the one which crossed the Channel in August, 1914. As invariably happens, many last-minute changes had to be made

in the agreed scheme, but the methods used in preparing the train programmes were designed to meet such contingencies. Altogether 261 special trains were booked to arrive at Southampton over a period of 27 days between September 9 and October 5. The trains were scheduled to arrive at standard times, with a minimum headway of half an hour. For instance, on the heaviest day, September 15, the first train was due from Portsmouth at 8 a.m. and the last train from Netley at 4.30 p.m. Between these times, 16 other trains were timed to arrive, at intervals of 30 minutes, from stations farther afield, including Richmond (Yorkshire), Blackpool, and Edinburgh. The whole Force consisted of 102,000 troops with baggage and equipment, of which armoured fighting vehicles and 6 in. howitzers formed part. While the main movement across the Channel was in progress, large numbers of men were being carried to camps where they were equipped for embarkation. For example, 34 special trains brought 14,000 troops into the Aldershot Command area between September 12 and 19. As soon as the first complicated movements were completed, a steady flow of reinforcements began to pass through Southampton, while stores and munitions in large quantities were shipped there, as well as at Harwich, Dover, Avonmouth, and South Wales ports. Next between January 7 and February 7, 1940, the second contingent of the B.E.F. was conveyed as quietly and methodically as the first had been, so that both the railways and railway-owned docks were largely concerned in the establishment of our armies on the Continent and in their efficient maintenance on foreign soil.

In March, 1940, plans were ready for transporting an expeditionary force to Finland from northern ports. The first set of troop trains had actually started when news came that Finland had agreed peace terms with Russia and the whole movement was cancelled. The ill-starred Norwegian Expeditionary Force was despatched in April, 1940; the troops and equipment were conveyed in 202 trains, chiefly to Glasgow and Leith. The original programme was changed at short notice, as the military situation altered, but the outward railway journeys passed off satisfactorily.

Perhaps it was a simpler matter to plan the regular movement of large contingents of troops to strengthen our armies in the Middle East and Far East. From August, 1940, onwards, sailings took place at intervals of a month until May, 1942, when three-weekly departures were instituted, A week was usually required to work the troop trains for each of the overseas drafts, whose equipment and supplies were forwarded to the shipping places by freight service a fortnight in advance. The Clyde and Mersey ports were

mainly used, although after the summer of 1941 a few trains were handled at Avonmouth on each occasion.

In striking contrast to those railway operations, with their careful timing and planning, will stand for all time the improvised working which rounded off the Dunkirk evacuation. The railway share in that memorable episode was to clear the British and Allied troops from the ports on the south-east and south coasts, where the rescue ships berthed. Neither the number of troops to be entrained, nor the rate of their landing at particular docks and piers, could be gauged accurately. The only course open was to arrange a flexible operation, capable of adjustment as matters developed. This movement was given the code name of "Dynamo," and began at dawn on May 27, 1940. First of all, a pool of 186 trains of coaches drawn from all companies was created. These trains were distributed to the landing places as required, and, as soon as they were loaded, went forward to intermediate regulating points, where ultimate designations were settled in consultation with the military authorities. In the absence of a programme, the working was controlled by telephone and no fewer than 620 trains conveyed over 319,000 troops from the disembarkation points to reception areas in all parts of the country. On June 3, Mr. Anthony Eden, who was then Secretary of State for War, wrote to the Chairman of the R.E.C. conveying the thanks of the Army Council to the managements and staffs of the railway companies for the part they had played in the evacuation, and on June 4, Lord Reith, at that time Minister of Transport, sent his congratulations on the "masterly handling of the train movements," adding that "to organise and carry through, without a hitch, an operation of this magnitude is an achievement of which anybody and everybody may be proud, especially at a time when the railways were heavily engaged otherwise on the haulage of Government traffic and on long and considerable movements of evacuated children."

A second phase of the B.E.F. evacuation began on June 6 with the redistribution of the troops from reception areas to military depots, where the units were organised and equipped afresh. Simultaneously the Allied troops, who had fallen back into France, were brought off through places on the Bay of Biscay and landed at ports on the south-west of England. The dispersal of these troops entailed the running of over 200 trains and additional specials were despatched about the same time with men and equipment to strengthen our defence system against a possible invasion. One large troop movement, made to Northern Ireland between June 16 and 19, 1940, occupied 23 trains between the south of England and Stranraer, where the ordinary steamer services were cancelled

and the L.M.S.R. vessels were used to transport the contingent to Larne. That was merely one of many occasions upon which the railways were called upon to move Army divisions from one end of the country to the other, but the sea voyage complicated the Irish transfers. In January, 1942, a division was taken away from Northern Ireland to leave room for the first American contingent. The move was spread over 17 days, but was hampered by severe weather ; one of the 43 trains despatched from Stranraer to the south of England was snowed up for more than 24 hours before it reached Carlisle. Happily, such a serious interruption to a train schedule was a rare occurrence, and even mountain regiments, with their complement of horses and mules, were moved punctually between camps in the wilder regions of Wales, Cornwall, and Scotland.

A special technique was evolved for dealing with armoured formations. In the latter part of 1940, the War Office, as part of its plans for defending the country, arranged for a number of trains of armoured fighting vehicles to be in readiness. Each train consisted of two or three passenger coaches, a stores van, from five to nine flat wagons for carrying tanks, and two ramp wagons. The flat wagons, termed " warflats," could carry a load of 50 tons, the weight of two medium tanks, and were furnished with suitable binding chains. At each end of a set of " warflats " was placed a ramp wagon—so called because two wheels could be moved under the wagon body and the wagon end dropped to rail level, extemporising a ramp for running tanks on or off the " warflats." At places where a loading dock was not available, the ramp wagons were brought into action and the tank crews soon became expert in using them. Both the " warflats " and the ramp wagons were the property of the War Office. The " A.F.V." trains attracted a great deal of attention as they passed along the railways, carrying units to and from the training grounds. For military manœuvres, carried out in October, 1941, the railways ran 31 of these trains from stations in the Bedford district. In February and March, 1943, a military exercise was carried out in the south of England on the largest scale ever attempted in this country. For the assembly of the contending armies, 221 special trains were run over ten days and 211 sufficed to disperse the troops in half of that time. This last piece of emergency working was effected through the medium of an inter-company regulating bureau established at the headquarters of the Oxford Military District Control Office. As soon as the dispersal area was known, the railway representatives, who had been waiting for four days at Oxford, proceeded to arrange the train working in consultation with the military authorities.

The movement of forces and stores for the North African campaign deserves separate mention. Covering the period from late October to early December, 1942, the most intensive working fell between November 7 and 12, and November 21 and 26, when a programme covering 373 troop trains was undertaken. The main sailing ports were Glasgow and Liverpool, but some parties were shipped at Newport, Cardiff, Swansea, and Avonmouth. A great deal of cross haulage was performed to meet shipping contingencies, trains being run from Taunton to Glasgow, and Dover to Liverpool, while others were passing from Liverpool to Avonmouth, and Preston to Newport. The scope of operations is brought out in the analysis quoted below :—

	Ports of Embarkation			
Entraining Area	*Clyde*	*Merseyside*	*S. Wales*	*Avonmouth*
London Area	3	4	2	—
Salisbury Plain Area	10	34	3	2
Hants and Southern England ..	11	9	—	—
West of England	2	1	—	—
South-West England ..	—	30	—	2
South-East England	8	3	—	4
South Wales	1	4	—	1
Lincs. and Eastern Counties ..	14	6	1	—
Midlands	5	15	4	2
Scotland, N. and N.E. Counties	115	67	9	1
Total number of trains ..	169	173	19	12

Altogether 440 troop specials carried our forces on the first stage of their expedition to North Africa. The shipment of stores proceeded on a more than proportionate scale, with 680 special freight trains run and 15,000 wagons worked to the ports by ordinary services.

Apart from the mass movements just described, trains were run regularly between the training areas set up in widely separated parts of the country, and also for bringing men on active service home for special leave. Between December, 1939, and May, 1940, the men serving with the B.E.F. in France and Flanders were sent on leave at the rate of 1,000 a day. During that period of five months, 1,429 specials were arranged for the conveyance of 421,000 members of the Forces. Train schedules were also drawn up for the benefit of the Forces serving in Iceland and the Orkney and Shetland Islands. It may be of interest to mention that railway-owned steamships carried large numbers of these garrisons between the northern islands and ports on the Scottish mainland. Further south, special facilities were provided for men and women travelling on recreational leave between many War Department Depots and the nearest large towns. As a rule extra trains were run on evenings during the week and on Saturday and Sunday afternoons.

Another cause of much special working was the arrival of troops, who came from all parts of the Empire to assist the Motherland. First on the scene was a contingent of Canadians, who disembarked on the Clyde in December, 1939, and within two days were despatched to the south of England in 17 trains. Many other drafts from the Dominions and Colonies landed at Clyde ports, but after May, 1940, Liverpool became a second disembarking place. Troopships were not ordered to the Clyde or the Mersey until they were approaching our shores, and alternative plans had to be prepared for working special trains from either the Glasgow district or Liverpool. These plans were elastic enough to be fitted in with the uncertain berthing arrangements of the ships. In extreme cases, troops landed at Glasgow were destined for camps in Southern England, while units discharged at Liverpool had to travel to the North. These difficulties became more pronounced when the U.S.A. forces arrived in large numbers from May, 1942, onwards. By the beginning of 1943 there was a steady inward flow at the rate of about 30 trains a month, but exceptionally large convoys came through in October and November of that year, entailing programmes of 203 and 260 trains respectively. The second influx was followed immediately by the outward movement from camping grounds of 113 trains with troops who were going overseas, and that was by no means the only occasion on which the resources of the railway companies were taxed to the utmost. The rapid increase in Government requirements for special working as the war progressed is clear from Appendix 12, which shows that 47,381 troop trains were run in 1943, and that more than one third of the number passed during the last quarter of the year. The figure includes about 80 trains used for carrying prisoners of war to internment camps.

This same Appendix 12 demonstrates that the movement of Government supplies was an exacting business. Between the outbreak of war and the end of 1943, the number of special freight trains run was 129,905, or 3,263 more than the number of troop trains worked in the same period. In the early period of the war, demands were met by the regular despatch of a few train loads each week, but, with the strengthening of the Allied armies in the Middle East, the War Office felt the need for a schedule from which it could requisition individual trains at short notice. A Stores Shipment Programme was prepared to meet its wishes, and, by the summer of 1940, included over 8,000 journey times between War Office depots and all the ports likely to be used. Each train was distinguished by a symbol, and the programme gave its starting and arrival times, the maximum load, and the route to be traversed.

A telephone message from the War Office to the railway company concerned thus sufficed to start any particular train on its journey. The bulk of its stores passed to Birkenhead for shipment and as a general rule traffic arrived by rail faster than it could be put on board ship. Serious congestion was avoided by setting up a special organisation to regulate the working of wagons to the dock quays and by providing additional standage sidings outside the dock area. Over and above the stores for our armies, large quantities of raw materials, foodstuffs, and mechanical vehicles were carried to ports on the south-west, west, and north-east coasts for shipment to Russia after August, 1941. These supplies for Russia entailed the running of special trains at intervals, and all the time the railways were kept busy conveying munitions from factories to storage depots, which often covered a large tract of country served by several railheads, so that the distribution of loaded wagons had to be regulated from a central station.

Throughout 1944, contingents of the Allied Forces poured into this country, mainly by the Clyde and the Mersey. April was the heaviest month, when more that 2,000 loaded coaches were despatched from Scotland to the south in one week. During the same week, 75 trains of nearly 1,250 empty vehicles were worked north across the Border to maintain the supply of passenger rolling stock. But already, on March 26, a start had been made with the scheme for assembling the Field Force for the invasion of North-West Europe and moving it forward, immediately before the appointed day, to marshalling areas on the coast between Tilbury and Falmouth, with Southampton as the main place of embarkation. The operation, known as " Overlord," involved the largest movement in history of attacking forces of all arms. In consultation with the British and U.S.A. transportation authorities, plans were laid for running over 80 troop and A.F.V. trains daily, apart from the large number of trains loaded with stores and munitions. The main moves to the marshalling areas began on June 3 and reached a peak from June 14 to 20, when 271 trains conveyed about 99,000 troops. The average daily movement remained at a high level until September, and then tended to diminish, though it went on until Germany was defeated. In the eleven months between D-Day and VE-Day, the total number of trains run for members of the Forces in connection with operation " Overlord " was 4,794.

Freight train working for the operation was conducted on the principles applicable to the movement of supplies, as already explained. Near the ports, yards and sidings were allocated as regulating depots for shipment traffic, so as to ensure a steady forward stream of goods wanted for vessels taking cargo on board.

A special feature of the freight working was the running of trainloads of locomotives and empty rolling stock, both British and American, for transfer to the Continental railway lines. Altogether, from D-Day to the end of 1944, the railways handled 14,763 freight trains of Government traffic in connection with the "Overlord" programme.

While traffic for the invasion of North-West Europe was at its height, the railways were called upon at short notice to carry anti-aircraft and balloon units, with their equipment, to districts in south-east England, where they could intercept flying bombs which crossed the coast. Later on, when the direction of the attacks changed, a great part of these defences had to be transferred —again at short notice—to East Anglia. Both moves were completed in a few days, but a continuous effort was required to deal with men coming on leave from the B.L.A. and the U.S. Forces. Special trains, equipped with buffet cars, were scheduled to run from the Channel ports to London, and to centres in the Midlands, North of England, and Scotland. The B.L.A. used Harwich, Dover, and Folkestone; the U.S. troops landed at Southampton. From January 1, 1945, when the first British contingent arrived at Folkestone, to VE-Day, 1,881 trains were worked to and from the ports, conveying more than 897,500 passengers. In addition, the L.P.T.B. ran special trains and buses for men who had to cross London in the course of their journeys.

Another agreeable duty, which fell upon the railways, was the carriage of mails for the Forces. The Army Post Office, Nottingham, dealt with mails for British Overseas Forces. In the early months of 1944, mails were conveyed by a special train from Nottingham to camps in Southern England and after D-Day a special ran daily to either Tilbury or Dover with mails for the Continental Armies. Numerous specials were also arranged to carry mail addressed to the Forces in distant theatres of war. Even the forwarding of parcels to men who had become prisoners of war occupied many trains. Between November 18 and 27, 1944, to quote one instance, 16 specials were needed to carry 619,000 parcels in 103,000 bags from centres as far apart as London, Leicester, and Glasgow. There was, too, a considerable business in parcels from the Forces abroad. These were sent to a central depot at Bournemouth for customs examination. In December, 1944, no fewer than 74,570 receptacles were handled at the depot, and it was necessary to resort to special train working. On arrival in this country, mails for the Canadian Forces were sorted, for a time, at Manchester (Mayfield), and subsequently at Kensington (Addison Road). In July, 1942, Sutton Park, an L.M.S.R. goods

station near Walsall, was assigned to the U.S. Army Post Office as a central sorting depot. From that date to the end of 1944, nearly 1,200 mail trains were worked in and out of the depot. During the years 1943 and 1944, another batch of 90 trains was despatched from Glasgow to Kirkby, conveying mail sorted and packed in receptacles for delivery to particular camps.

As the invasion of Europe went forward successfully, thousands of German prisoners were brought to this country through Southampton, Newhaven, Gosport, Tilbury, Purfleet, and Portland. From D-Day until the end of 1944, 765 special trains of open saloon stock were employed in carrying these prisoners to transit camps, of which the principal were Kempton Park, Devizes, and Moreton-in-the-Marsh. A second set of 683 specials next moved the prisoners from these camps to permanent places of internment. By way of contrast, the first party of repatriated Allied prisoners of war arrived at the Clyde on September 15, 1944, and travelled to different districts in 4 ambulance trains and one ordinary train. During 1945, there was a constant stream of men released from captivity back to this country. Most of them arrived by air and were conveyed by rail from the landing grounds to reception camps or to their homes. Between New Year's Day and VJ-Day, 265 special trains carried 129,000 passengers of this description and over 48,000 other repatriated people travelled by ordinary train.

Sufficient details of movements on a large scale have been given to illustrate the insistent demands for special train working, which rose to a peak in 1944. The number of specials run in that critical year is shown in Appendix 12 as 178,362—nearly one third of the total of 538,559 for the duration of the war. It will be seen that the pressure on the railways was unabated right through the first seven months of 1945. No more conclusive evidence could be furnished of the indispensable part taken by the railways in the total war effort of the Allied Nations.

CHAPTER 13

Freight Train Working

BETWEEN the two great wars the railways had accelerated many freight train services. About 700 braked goods trains ran regularly and made possible the delivery of valuable merchandise in most large towns on the day after despatch. These express freight services suffered the same fate as high-speed passenger trains. Their schedules were revised, and the train loads were advanced to the limit of the capacity of the locomotives when running at moderate speeds. Further changes in the freight working timetables were necessary, in order to surmount some of the difficulties due to the black-out by starting as many trains as possible in daylight. The priority given to countless Government requirements for transport also slowed down the progress of ordinary freight trains and transit times tended to lengthen ; but for the first three and a half months of war the traffic position was not unsatisfactory. Serious congestion was prevented by keeping most of the important marshalling yards open continuously and clearing up arrears of freight movement at weekends. Then came the worst period of wintry weather within living memory. Widespread fog set in just before the first wartime Christmas, and was followed by a prolonged spell of frost and snow. Throughout January and the early days of February, 1940, train and shunting movements were slowed down through the freezing of points, water columns, and troughs. Failures of signalling, and telegraph and telephone apparatus, were common, and even engines in traffic, and at running sheds, were damaged by the intense cold. At the end of January, these troubles culminated in heavy snowstorms, which blocked stretches of line at over 300 places. Snowdrifts held up close upon 200 trains, and the working of coal traffic over the main routes was stopped completely for some days. When a thaw set in, ten lines were blocked by landslides or floods between February 4 and 8, 1940. Altogether, the outdoor staff had a very trying experience and deserve praise for the exertions they put forth to get trains through, in spite of all obstacles, but the railways took some time to recover from the setback to their operating performance. Yet the need for efficient freight movement was pressing. The inland transport of a number of commodities was vital to the

successful conduct of the war, and only the railways could deal with the large tonnages offering for conveyance.

Without particularising further, it is fair to say that the volume of freight traffic expanded in ways that were quite unnatural during the first twelve months of war, but was handled without undue difficulty or delay until September, 1940. In that month, air attacks damaged marshalling yards in the London area and interrupted busy exchange routes. This interference came at a critical time for railways, dock undertakings, and shipping, when they were beginning to feel the full pressure of wartime requirements, and were striving to adjust their operating methods to cope with exceptional and erratic demands for transport. The Minister of Transport was alarmed by reports of slow turnround of shipping, which was attributed to shortage of railway wagons. Moreover. he was concerned at the number of traffic restrictions imposed, and concluded that the railways were badly congested. On October 31, 1940, he requested the R.E.C. to set up a Committee of Enquiry, to visit the worst centres of congestion and suggest means for improving the situation. The R.E.C. promptly nominated a committee composed of four officers with wide experience :—

Mr. C. M. Jenkin Jones	L.N.E.R., Chairman.
Mr. R. P. Biddle	S.R.
Mr. C. Phizackerley	L.M.S.R.
Mr. W. J. Sawkins	S.R., Statistical Assessor.

On November 6 the committee began its enquiry at Liverpool, where difficulties had arisen about the supply of rolling stock. Manchester was next visited and the committee afterwards examined the dock and railway facilities at Cardiff, Bristol, Birmingham, and Banbury, besides investigating traffic operations at Shrewsbury, and other places as far west as Swansea, and as far south as Basingstoke.

As the R.E.C. wished to have a report within four weeks, the committee had to deal with its remit on broad lines, and was usually content to suggest the general direction in which remedies for specific difficulties might be sought. Its report, completed on November 28, was a lucid statement of the impressions formed during the survey. The committee found that conditions were not so serious as the Minister of Transport had imagined, and showed that some of the difficulties which had arisen were not caused by defects in the railway arrangements. Of 36 recommendations contained in the report, some were of a general nature, and others dealt with local questions, such as lending a railway operator to the Mersey Docks & Harbour Board, to assist in making the best of the limited rail layout at Liverpool. Most of the general

suggestions were in line with plans which the railways were already contemplating for easing the movement of traffic, and, indeed, the report could hardly have been lodged at a more opportune time. By stressing the need for increasing line capacity at many places, for extending train controls, for pooling freight rolling stock, and for improving the turnround of wagons everywhere, the committee gave an impetus to the consideration of these problems, and definite action followed sooner than might otherwise have been the case. The committee was in favour of the establishment of an inter-company control, which would be responsible for operating the four railways as though they formed a unified system. This proposal was not carried into effect, but instead the Central Inter-Company Conference of Operating Superintendents was set up, as explained at the close of Chapter 6.

One other recommendation of the Committee was of fundamental importance. This involved the adoption of new methods for regulating Government traffic. In passing the proposal forward, the R.E.C. urged upon the Minister of Transport that "immediate attention should be given to the systematic planning, in advance of actual wartime needs, of the probable traffic requirements of the Government departments and the industries engaged in the production of essential material." The R.E.C. went on to point out that the lack of this planning was at the root of the transport problem, and its representations soon led to closer co-operation between the Government departments and the railways.

Undoubtedy, the report of the committee was of value to the individual railway companies, to the R.E.C. and to the Minister of Transport. It was agreed on all sides that the members of the committee were to be commended for the energy which they threw into the enquiry, and for the rapidity with which they formulated constructive proposals. There was, however, no royal road to the solution of the freight operating problem. Its nature can best be explained by giving an account of the chief exceptional traffics which developed during the war years, and describing the special measures taken to deal with them.

"Convoy" Coal Trains

In the midst of their first wartime struggle with working difficulties caused by abnormal weather, the railways were asked to carry quantities of coal diverted from coastwise shipping which, it was estimated, might amount to 10,000,000 tons a year. In February, 1940, the Mines Department submitted proposals for the movement of over 140 coal trains a week from the Northumberland, Durham, and Midland (Amalgamated) coal districts to London

and other places south of Doncaster, Normanton, and Leeds. These " convoy " trains, as they were termed, consisted of 50 wagons of 12 tons capacity, though their loads were lightened on certain sections of line. Details of each week's programme were arranged at meetings between operating representatives of the railways and the Mines Department, which gradually expanded the scope of the scheme to cover Lancashire and Scotland. The table below shows the number of convoy trains run year by year from the North Eastern and Midland coalfields :—

	from Northumberland and Durham *Trains*	*from* Midland (A) District *Trains*	*Total Number of Trains*
1940	6,126	1,631	7,757
1941	7,894	2,140	10,034
1942	6,260	2,085	8,345
1943	5,032	2,083	7,115
1944	6,274	1,992	8,266
January to August 11, 1945.. ..	3,053	1,269	4,322

It will be seen that the diversion of coal to rail was heaviest in 1941, when more than 200 trains were run in many weeks and a single programme covered 297 journeys. In that year, the railways could have run many more trains in the spring and summer months if the collieries had raised sufficient coal. Actually, the average number of trains per week was highest during the winter of 1941–1942 when operating difficulties were extreme and severe snowstorms occurred in Northumberland, Durham, Yorkshire, and Lancashire. The railways had much the same experience in the summer of 1942, when loadings at the pits fell far short of the standard schedule of 227 trains a week agreed with the Mines Department.

Three out of every four convoy trains originated in Northumberland and Durham, where in peace time most of the coal was carried in hopper bottom-door wagons over short distances to shipment places, or to works on the North East coast. These hopper wagons could not be handled at destinations in southern and western England. Trains of empty 12-ton standard coal wagons had therefore to be hauled from the south to the Northumberland and Durham collieries. Many of the requisitioned wagons were not fit for long hauls under load, so that the progress of the convoy trains was often retarded by breakdowns. On an average, three of these coal trains occupied a stretch of the L.N.E.R. main line as long as five goods trains would have done, and their movement entailed much calculation and careful planning. Apart from the convoy programmes, the practice of working full trainloads from the coalfields to one destination was extended with advantage. The amount of shunting at intermediate marshalling yards was lessened,

transit times were reduced, and the wagon stock became more mobile. This method of working was most successful in the Midland (*A*) District, which forwarded 29,370 trains for nominated destinations in 1944.

A peculiar problem arose in London when an increasing volume of coal was diverted from sea to rail, and had to be passed through the railway companies' waterside depots because consignees could only take delivery by barge. In January, 1940, the London Coal Tipping Control was set up, consisting of representatives of the Port of London Authority, the Lighterage Executive, the Mines Department, and the railways, to regulate the flow of coal through the tipping points. The Control became a purely advisory body two months later, when the whole of the waterside tipping stations in the Port of London were placed under the direction of the London Port Emergency Committee. Through the medium of this organisation, the tipping capacity on the River Thames was employed for the common good, barges were turned round promptly, and coal supplies were maintained to public utilities and firms dependent upon water access.

Petroleum and its Products

At the end of the last war, Lord Curzon said that "the Allies floated to victory on a sea of oil". The same remark might be made with added force about the defeat of Germany in 1945. From the beginning of hostilities, large quantities of petroleum products were imported at west coast ports, mainly those on the Bristol Channel and the Mersey. Most of the refined products were required in Lincolnshire, East Anglia, Kent, Sussex, and Hampshire, but it would have been hazardous to bring oil tankers round to east coast ports.* By March, 1940, the railways were working 6 block train loads of petrol across country every week, and hauling 4 trains of empty tank wagons back to the forwarding depots. As the war went on, the number of trains required for carrying aviation spirit, petrol, or crude petroleum for refining grew steadily, and in all 31,215 trains were worked by the end of 1943.

The movement of this valuable, but dangerous, traffic was complicated by the precautions adopted by Government to safeguard stocks of inflammable liquids. An area with an average depth of 30 miles was mapped out along the east and south coasts from Newcastle to Plymouth. No large quantity of petroleum was allowed to remain in that area overnight and supplies had to be delivered during the day, while the trainloads of oil tanks were kept to the routes outside the restricted belt of coastline as far as

practicable. The standing route lists were also adjusted to cope with the increasing volume of traffic moved in 1942 and 1943. The weight of petroleum forwarded from Avonmouth and South Wales to the Eastern Counties was too much for the Acton route, and in September, 1943, as many as 10 trains a day were diverted *via* Reading Spur, Kew East, and the L.M.S.R. ; 2 *via* Princes Risborough and Neasden ; and 2 *via* Yarnton and Cambridge.

Between May, 1941, and March, 1944, the Petroleum Board constructed a grid of oil pipelines, covering more than 1,000 miles, and capable of carrying 5,000,000 gallons every day, from western ports to the eastern and southern counties of England. As sections of the grid were finished, the pressure on rail transport eased off, though many petroleum specials continued to pass throughout the winter of 1943/1944. With the coming of summer, the invasion of the Continent changed the situation once more. In the four weeks after D-Day, June 6, the record number of 1,579 trains of petroleum in tank wagons passed over the railways. At other times, calls for special working reached the railways at short notice, as happened when, in two or three weeks from September 16 onwards, 25 trains, each consisting of 25 tanks holding about 100,000 gallons of petrol, were run overnight from Avonmouth and Ellesmere Port to places in Eastern England, where transport planes were waiting to carry the spirit overseas. After September, the volume of petroleum traffic began to decline, as alternative means of maintaining supplies on the Continent came into being. In this country, as in the United States of America, one of the outstanding features of wartime transportation was the success of the railways in moving unprecedentedly large quantities of petroleum over their lines with a limited stock of tank wagons.

Constructional Materials for Airfields

In the summer of 1942, the Air Ministry advised the railways of plans for a bomber offensive against Germany, which would entail the conveyance of large tonnages of constructional materials. Nearly 150 airfields were to be laid down in East Anglia primarily for the use of bomber aircraft, and simultaneously a large number of aerodromes for fighter planes would have to be built in Kent and Sussex. The sites were dispersed widely over the two areas and were usually near wayside stations, designed to deal with a moderate weight of agricultural traffic. There was not time to extend the railway accommodation at these places and, as a rule, the best had to be made of the existing facilities. This meant that, while the airfield building programme was being carried out, some of the stations were called upon to handle ten times their normal

tonnage, and the extra traffic had to travel over routes which were already heavily taxed by the movement of troops and Government stores. In the end, careful planning, in consultation with the Air Ministry and the R.A.F., enabled enormous quantities of material to be delivered in good time to the building contractors.

The commodities which passed in the greatest volume were rubble, bricks, tarmac, slag, and cement. Rubble from bombed buildings in London was brought into East Anglia at the rate of 6 trains a day from November, 1942, to April, 1943, when 3 more trains were worked daily until July, 1943. During that time, the total number of East Anglian trains was 1,700, and they carried some 750,000 tons of rubble. Kent and Sussex aerodrome sites took 54,000 wagons of rubble from London and provincial centres, such as Portsmouth and Birmingham, between February, 1943, and June, 1944. In the summer of 1943 the railways ran 40 special trains, conveying 14 million bricks, from Bedfordshire to East Anglian stations at the rate of 2 a day. Again, East Anglia drew from the Midlands 3,000 tons of tarmac or slag daily for a period of 80 days in 1943. This involved the running of 800 special trains.

Practically the whole of the cement for the East Anglian airfields was carried by rail and it was not easy to regulate the forwardings, as odd lots came from many factories. Eventually, arrangements were made with the principal cement manufacturers to despatch traffic for the airfields in block train loads to certain concentration points, each serving a group of stations. Each station then ordered forward from its centre sufficient cement of the right brands for its next day's requirements. Under this system, cement could not accumulate at any one station, and every airfield received its daily quota. Supplies at the central points were kept to proper limits by restricting the direct train loads from the factories situated mainly in the Midlands and North Kent. In the autumn and winter of 1944, the number of these cement specials was 900.

HOME-GROWN TIMBER

As in the last war, there was a large movement of timber felled in Scotland to places south of the Border. The rapid growth of the tonnage conveyed appears from the table below :—

	Tons
1940	717,800
1941	774,600
1942	1,200,000
1943	1,513,800

The 1943 carryings were 26 per cent. above the 1942 figure, but included over 286,000 tons railed to Scottish ports for coastwise

shipment, as compared with 92,500 tons in the 1942 total. The increase in the direct rail tonnage in 1943 was 11 per cent., and some of the timber was hauled for long distances.

Iron Ore

In peace time a large share of Great Britain's steel manufacture was produced from foreign ore at blast furnaces located near the coast. When war stopped most of the foreign supplies, steps were taken to mine more home ore, particularly from the deposits in the counties of Oxford, Northampton, Rutland, and Lincoln. An average weekly output of 120,000 tons in 1937 was advanced to 210,000 tons by 1942—an increase of 75 per cent. Questions at once arose about the supply of suitable wagons, and about the working of the ore to the furnaces, along with the proportionate tonnage of coke and limestone required. The first problem is discussed in the chapter on Freight Rolling Stock; the second was solved by active co-operation between the railways, the British Iron & Steel Federation, and the Ministry of Supply (Iron & Steel Control). On some branch lines, sidings and other facilities were provided for operating additional ore trains, and, in spite of the fluctuating requirements of the steel industry, over 10 million tons of ore were carried each year from the Midland ironstone area to furnaces in South Wales, North-eastern England, and Scotland. The haul to the Scottish steel works was an exceptionally long one for heavy freight traffic in this country.

The output of ore was reduced in March, 1944, by about 60,000 tons a week in order to leave the railway lines free to carry military traffic required for the "Overlord" operation, but after August production was raised gradually until the 1942 peak of 210,000 tons a week was approached in December. The need for these steps may be judged from the turnover of munitions and stores at British and U.S.A. army depots in all parts of the country. During the first six months of 1944 nearly 3,110,000 loaded wagons were received at and despatched from these depots, an increase of 1,015,000, or 48 per cent. on the number of wagons handled in the first half of 1943.

Explosives

The ordinary regulations in regard to the conveyance of explosives could not be applied in time of war to such traffic passing on Government account. Instead of limiting the number of wagons of explosives on any one train to 5, leave was given to work train loads up to 60 wagons with Government traffic. The maximum

load of explosives for an open wagon was raised from 2,240 lb. to 4,000 lb.; for a covered van the maximum was advanced from 10,000 lb. to 16,000 lb. in the case of some classes of dangerous goods. Sheeted wagons and ordinary covered vans were used for various grades of explosives for which gunpowder vans are essential in peace time. Certain types of grenades, bombs, and chemical preparations, of an especially dangerous nature, were marshalled at the rear of trains, which were not allowed to carry any other explosives, and were accompanied by a conducting party. By relaxing the regulations in these and other ways, the railways were able to carry immense quantities of explosives on behalf of the Admiralty, War Office, Air Ministry, and Ministry of Supply. The contents of a few wagons caught fire or exploded while in transit, and, unhappily, several railwaymen lost their lives in these accidents, but the sum total of the loss and damage caused was insignificant in relation to the volume of dangerous materials moved over long distances, often in response to urgent requisitions.

Exceptional Loads

The war, with its elaborate mechanised equipment, involved the transport of many an out-of-gauge load, which could only be worked forward at a slow speed in compliance with a special programme. The load might have to be adjusted at various stages of its journey, and often fouled adjoining lines. Mammoth guns used by the Army and Navy sometimes had to be moved with the utmost despatch, consistent with safety, but the main war problem was the handling of tanks, constantly growing in size, and multiplying in number. The arrangements for providing suitable wagons are described elsewhere. Here it will suffice to record that in September, 1941, regulations for the acceptance and conveyance of the "Churchill" tank were issued and proved so useful that they were extended to cover other types. The instructions applied to movement by ordinary freight trains, but also specified how full train loads, accompanied by tank crews, could go forward under war conditions of extreme urgency. Advice was given about the class of wagon to be used, the methods of loading and securing tanks, and the precautions to be observed in transit, so that the railway staff knew how to deal with any type of tank tendered for carriage.

It so happened that the two largest and heaviest loads ever carried by the British railways passed during the war, but they were only indirectly connected with the war effort. In May, 1941, a stator weighing 130 tons was conveyed from Newcastle-on-Tyne

to Coleshill *via* Egginton, by the L.N.E. and L.M.S. Railways. The stator was carried slung on the girders of a set of five special wagons fitted with a cantilever arrangement, which distributed the weight of the load. The girders were set on rails, so that the stator, whose extreme width was 13 ft. 1½ in., could be moved transversely 1 ft. to either side in order to clear structures. This extraordinary consignment could travel only on Sundays, when two lines were cleared for its passage, and took five weeks to complete its journey. A second stator of equal size made the same prolonged trip without a hitch, but the working of such abnormal articles by rail delayed many ordinary freight trains and led to others being diverted to circuitous alternative routes.

Tranships : Nominated Loading

In peace time the custom was to send many lightly-loaded wagons of high-class merchandise through to destination, mainly for reasons of commercial policy. After the outbreak of war, this practice was stopped, unless consignments were urgent and could not be carried by road. Traders thus lost a facility that they valued at the very time when war conditions, such as shortage of supplies of many articles, were compelling them to forward goods in small lots, and there was a sharp rise in the quantity of traffic sent to intermediate stations for transhipment. In an effort to reduce the volume of tranships, and to improve wagon user, the railways revived the system of Nominated Loading, which they adopted successfully during the last war. Under this scheme, consignments were held back, either at forwarding stations or at senders' premises, for through loading on specified days. The orderly method of despatching goods often shortened the transit time to their ultimate destination, and Nominated Loading answered its purpose wherever the co-operation of traders was secured.

When air raids were at their height in November, 1940, forwarding arrangements were tightened up still further, and wagons were held back for full loads at all stations in order to save mileage. The next step was taken on June 16, 1941, when the R.E.C. established Nominated Loading on a definite basis, common to all railways, and a notice to the public was issued in the following terms :—

Nominated Loading of Goods Train Traffic
Notice to the Public

To speed up the transport of small consignments of goods train traffic which cannot be forwarded in through wagon loads, the railways have decided to extend the system of Nominated Loading—that is, the arrangement

of regular services of through wagons to certain destinations on specified days of the week. This system operated in the last war with beneficial results, and the railways feel that any measure which can be adopted to improve transit will be generally welcomed.

As from June 16, 1941, consignments of miscellaneous general merchandise of less than one ton will only be accepted on specified days of the week, or by the route of one railway, for conveyance to certain destinations or areas. The railways will advise traders of the destinations and the days of the week upon which such traffic will be accepted, and the name of the railway to whom the goods must be tendered ; in no case will the nominated days for despatch be less than two per week. *Traffic between important towns will not be affected.*

Finally, towards the end of 1942, the despatch of nominated wagons was limited to one a week, unless the amount of traffic originating at a station justified a more frequent service.

These measures had some bearing on the steady improvement in the average wagon load at starting point of merchandise (excluding classes 1 to 6) and livestock. Taking free-hauled traffic into account, the pre-war figure of 3 tons was advanced to 4·27 tons in 1944, an increase of 42 per cent. On the same basis the average wagon load of minerals and merchandise in classes 1-6 improved by 5 per cent. to 10·49 tons, while the figure for coal, coke, and patent fuel was stationary at 10·38 tons. The railway companies cannot do a great deal to influence the loading of heavy traffics from private sidings, and no doubt that explains why the average load for all classes of traffic rose from 7·29 tons pre-war to 7·49 tons in 1942, but declined to 7·41 tons in 1944.

Allocation of Traffic between Road and Rail

Until the late summer of 1943, the Minister of War Transport adhered to the policy of restricting road haulage and directing traffic to rail wherever practicable. This was a contributory cause of an acute shortage of wagons, which affected both collieries and some manufacturing establishments. In order to improve the wagon supply to collieries, it was decided that the railways would not use mineral wagons for general merchandise, though exceptions were allowed for cement, beet pulp, timber from the Highland line, and port traffic, in an emergency. The Regional Transport Commissioners were advised on October 1, 1943, that, as the change in the arrangements for wagon distribution would add to the pressure on the stock of goods wagons, the amount of road transport should be increased, even if vehicles standing unused had to be brought back into service. The Commissioners were requested to agree with the railway officers the most appropriate allocation of traffic between road and rail with a view to making the best use of

both forms of transport. The hands of both parties were strengthened by the Railways (Acceptance of Merchandise) Order, 1944, which decreed that on and after February 1, 1944, " Notwithstanding any obligation imposed upon it by, or by virtue of, any Act or instrument determining its functions, no railway company shall be bound to accept for conveyance merchandise designated by the Minister of War Transport, or anyone duly authorised by him in that behalf, as merchandise which should not be consigned by rail."

A Summing-Up

The preceding paragraphs, under distinctive headings, may suffice as a synopsis of the freight traffic position. From the outset, the railway companies appreciated that the existing stock of wagons would have to do more work during the war than it had previously performed. Larger wagon loads would not suffice ; every effort would have to be made to turn wagons round quickly and keep them moving. The first line of action was to regulate the forwarding of freight traffic systematically, so as to prevent congestion either in transit or at the receiving end. Where large streams of traffic were passing to particular consignees, the flow was controlled in accordance with the rate of clearance at the points of discharge. A close watch was kept on goods for Government departments, and, in some instances, permit systems were introduced under which senders had to obtain authority to forward. When a block of traffic did arise, restrictions were placed on the acceptance of traffic for the places affected until the lines were cleared. In times of keen pressure, the placing, and equally the removal, of traffic restrictions called for the exercise of sound judgment on the part of the regulatory staff. If it was necessary to block back wagons from distant sending stations. the operating conditions over a wide area had to be weighed up, and at all times the railways strove to avoid embargoes on traffic for which the Government desired a high degree of priority.

Minor Railway Companies

A word of commendation is due to the Association of Minor Railway Companies for the good work which its members did during the war. They strained their resources to the utmost in dealing with traffics which their lines were not designed to carry, and they co-operated helpfully with the Main-line companies in times of emergency. One or two examples will show the effect of the war on their operations.

The Derwent Valley Light Railway runs for 16 miles through agricultural country between York and Cliff Common, connecting at both ends with the L.N.E.R. In 1935 the line carried nearly 53,000 tons of freight traffic; but the 1943 carryings of 165,000 tons were more than three times as large, and included valuable commodities for Government aerodromes and depots adjoining the railway.

Over the same period, the traffic passing over the 2½ miles of the Easingwold Railway, north of York, increased from 8,000 to 37,000 tons, three aerodromes and a flax factory having been opened in the neighbourhood.

The North Sunderland Railway, between Chathill and Seahouses, on the Northumberland coast, handled over 4,000 tons of traffic in 1943, including 1,670 tons of fish. In peace time its carryings were about 1,200 tons a year.

The Barrington Light Railway, in Cambridgeshire, carried over 50,000 tons of gypsum and coal each year to cement works producing about 80,000 tons of cement, which was badly wanted for Government purposes.

From a junction at Shepherdswell, on the Southern Railway, the East Kent Light Railway serves a fertile fruit and vegetable growing district stretching to Wingham, with branches to Tilmanstone Colliery and Richborough. Though extensive exercises were carried out on the railway by the Military Authorities, goods traffic increased from 8,000 tons in 1940 to 18,000 tons in 1944, and minerals from 4,400 to 6,250 tons, but coal and coke declined from 330,700 to 278,000 tons over the same period.

The Kent & East Sussex is another useful light railway, 22 miles in length, running from Robertsbridge through the Weald of Kent to Headcorn, and joining the Southern Railway at both of these places. During part of September and October, 1944, enemy action severed the main lines from Hastings, *via* Ashford, Tonbridge, and Polegate, but the situation was saved by working some 600 wagons over the Kent & East Sussex line until the S.R. lines were cleared. Between March, 1942, and September, 1944, more than a score of troop trains composed of main line coaching stock were worked over the light railway, and for 3½ years the War Department operated batteries of heavy artillery from point to point by means of its own locomotives. In peace time the amount of freight traffic handled was 30,000 tons a year on an average. During the war years the average tonnage advanced by 58 per cent. to 48,000.

Obviously, the movement of heavy traffics over our light railways called for special attention to maintenance and working arrangements, but these short lines proved their utility in no uncertain fashion.

CHAPTER 14

FREIGHT ROLLING STOCK

IN chapter 7 a brief account was given of the part played by the Railway Clearing House in conducting the arrangements for the common user of wagons and sheets, which had been gradually extended between the two wars. In normal times each railway maintained its wagon stock at the level requisite to provide for the traffic expected to originate in its own territory. After the outbreak of war, changes in the volume and flow of traffic disturbed the usual requirements for both numbers and types of common user wagons in most forwarding areas, and also upset the customary methods of dealing with wagons which were excluded from the common user scheme and were generally returned empty to the owning railway. A further complication arose through the notice, dated September 3, 1939, of the Minister of Transport requisitioning privately-owned railway wagons. This notice, of which a copy is attached as Appendix 13, transferred over half a million wagons belonging to private owners to the direct control of the railways. These wagons were to be used interchangeably with railway-owned stock, but, whilst brought within the scope of the common user arrangements, they could not be apportioned between the four railways on the basis of ownership or previous employment, as, owing to the changes in flow of coal class traffic, the wartime requirements for wagons in the different coalfields bore no relation to the number of privately-owned wagons normally in use in those regions, or to the number actually in the possession of each railway at the date of requisitioning. After a year's experience of the changed conditions, the Railway Executive Committee decided to suspend the common user arrangements and to create a general pool of freight rolling stock, centrally controlled, as a wartime measure. On March 1, 1941, the Inter-Company Freight Rolling Stock Control was established at Amersham, near to the Railway Clearing House, and assumed responsibility for the distribution of stock between the four Groups, according to their actual needs and the conditions prevailing from day to day. The Control was in charge of a chief distributor, who was assisted by a small staff of men with special experience of rolling stock matters, and was subject to the jurisdiction of the Freight Rolling Stock Committee, composed of a representative of each main-line railway,

the chief distributor, and an independent Chairman, Mr. T. E. Batty, whose services were lent by the L.N.E.R. Mr. Batty acted in a consultative and supervisory capacity, and devoted the whole of his time to the study of rolling stock problems, reporting to the R.E.C. Operating Committee as and when necessary.

The Control was entrusted with the manipulation of 652,000 railway owned wagons and 585,000 private owners' wagons of many different types. Details of the book stocks, as they varied from year to year, are given in Statements A and B at the end of this chapter. In addition, over 355,000 wagon sheets, and 212,000 ropes had to be distributed. Statements C and D show that the stocks of both sheets and ropes were substantially increased as the war went on and the volume of traffic grew. The first essential was to devise a procedure which would keep the Control posted about the position throughout the country. In the case of general merchandise, every station was instructed to prepare a daily return of the total number of wagons of various types handled, and of its requirements for wagons, sheets, and ropes for use the following day. A summary of these returns was in the possession of the Control by nightfall and the allocation of the available stock was then decided. The distribution of requisitioned, and railway-owned, end door wagons for the loading of coal and coke was fraught with greater complications. In practice, the railways were not under obligation to supply wagons for the carriage of coal and coke, except in a few regions, such as the North-eastern area of England, Kent, and Scotland. For the first time, the requisitioning of private owners' wagons placed the onus on the railways of keeping the collieries adequately provided with wagons from the general pool. After negotiations with the Mining Associations in England & Wales, and in Scotland, agreement was reached that a wagon allowance scheme should apply to all collieries as a wartime measure. The main principle of the scheme was to allow each colliery a varying standage of wagons, loaded and empty, equivalent to one and a half times the average number per day forwarded loaded during the previous week. Additional wagons were allowed to compensate for any in use for internal purposes, under or awaiting repair, and received with inward loads. Wagons in excess of the allowed number were also to be supplied to meet exceptionally heavy despatches of coal, definite orders in view, and cases where shipping was late in arriving. It was further understood that empties would be supplied in sufficient numbers to keep the pits working, when that would not result in the loaded and empty wagons on hand exceeding the allowances. In the event of the number of wagons at a colliery exceeding the allowance, the supply of empties

was to be restricted, unless there was some prospect of an early outlet for the coal. On the direction of the Ministry of War Transport, certain extra wagons were allotted to anthracite collieries in South Wales, on account of the numerous sizes of coal produced and the low ratio of saleable coal to total output.

In assigning basic wagon allowances to the collieries, every relevant factor was considered, and the winning of coal was rarely stopped by a shortage of empties. The colliery companies co-operated heartily with the railways in applying the new system, advising the local control office of their position day by day, as well as rendering daily wagon returns from which the weekly allowances were calculated. By means of a return taken at stations, private sidings, and shipping places each morning, the railways and the Control kept watch on the turnround of coal and coke wagons in receiving areas, and adjusted the flow of empties to suit the needs of the colliery districts. The indiscriminate use of requisitioned wagons enabled the railways to run a large number of booked trains of empties direct to collieries and saved a great amount of sorting, which was inevitable when private wagons had to be distributed in accordance with the owners' instructions.

Much the same principles were applied in regulating the supply of ironstone wagons to the home ore fields, which were expanding their output to make up for reduced imports of foreign ore. A pool was formed of about 6,000 privately-owned wagons and 3,000 railway wagons, which were generally confined to the carriage of iron ore from the Midland quarries. These wagons, being hoppered and fitted with bottom doors, could not be used for loading general merchandise. The British Iron & Steel Federation ordered 1,000 new 22-ton ironstone wagons, which went into the pool. Later, it was strengthened by the temporary transfer of 1,600 L.N.E.R. steel hoppered wagons, and the Ministry of War Transport also authorised the building of 2,500 wagons of the same design, on the understanding that they would eventually be absorbed by the L.N.E.R. into its own stock. At the end of 1943, the number of pooled ironstone wagons was 12,420. Their use was arranged by the railways and the Inter-Company Freight Rolling Stock Control, in consultation with the Ministry of Supply (Iron & Steel Control), who advised the tonnages, and destinations, of the ore drawn from each mine every week. The supply of empty wagons was based on that information and the tonnage despatched was regulated to conform to the rate of unloading at the blast furnaces. Every effort was made to run block trains of loaded wagons direct to the works and to return empties to the mines without much shunting in marshalling yards. The Iron Ore

Committee, consisting of representatives of the railways and the Ministry of Supply, met once a month to review variations in the output of ore and in the main streams of traffic. Unless the railways, the traders, and the Ministry had collaborated freely and constantly, it would not have been possible to move more than 10 million tons of ore a year—much of it over long distances—with the regularity needed to keep the blast furnaces blowing.

Curiously enough, the L.N.E.R. 20-ton steel coal wagons figured in another pool of vehicles for carrying bulk grain. The railways had a stock of 300 bulk grain vans, but the Ministry of Food estimated that, owing to the diversion of shipping from the east to the west coast, four times that number would be needed to supply the flour mills. By fitting felt or rubber strips round the bottom doors, 900 L.N.E.R. coal wagons were adapted temporarily for the transport of grain, but in the end only 231 were used. At a later date, these wagons were pooled with the 300 bulk grain vans and distributed by the Rolling Stock Control, in connection with a scheme initiated by the Ministry of Food for drying and storing grain in a number of 5,000-ton silos.

A third pool with distinctly novel features was instituted to assist the Ministries of War Transport and of Food to improve the turnround of ships bringing refrigerated commodities to the ports. The cargoes had to be cleared by railway insulated vans and containers, and by privately-owned insulated road motor vans. The maintenance of an adequate supply of vehicles was not an easy matter because ships arrived irregularly and sudden fluctuations occurred in the landings of frozen meat. At the outbreak of war, a road pool had been formed by the Wholesale Meat Transport Association, which became in time the " Road Haulage Section—Meat " of the Ministry of War Transport, but that arrangement embraced only 1,241 vehicles, and as an organisation of wider scope was clearly required, it was decided to pool all rail and road insulated units. The railways' share in the pool was 2,774 insulated meat vans, 3,543 insulated banana vans, and 2,354 insulated containers, which had not previously come under the common user scheme. Arrangements were now made for these vans and containers, with the flat wagons accompanying them, to be used interchangeably, and for the Rolling Stock Control to allocate the stock according to requirements in any part of the country. At each port, a committee was formed consisting of representatives of the Ministry of Food, the Wholesale Meat Transport Association, the Meat Importers' National Defence Association Limited, and the railway companies, to decide, from day to day, the tonnage to be conveyed by rail or road, having regard to the available transport

and prevailing conditions. These port committees were subject to the guidance of a central authority, known as the Meat Stock Distribution Committee, which represented the same interests, and was established at Amersham, where it could keep in close contact with the Rolling Stock Control. The Ministry of Food notified the Distribution Committee of refrigerated ships due to arrive, so that steps could be taken to work rail and road insulated stock to the ports concerned. The Committee was also posted about the unloading arrangements for each ship, and the supply of vehicles was adjusted to provide for any unexpected development. The whole organisation was a unique example of inter-working between the four independent transport agencies handling steamship, dock, rail, and road facilities. Without that co-operative effort, the Ministry of Food might not have been able to provide the people with the full meat ration.

The railways gave further assistance to the national plans for distributing food by treating 3,200 covered fish vans as a common stock and by pooling 1,671 ventilated vans, and 415 ventilated containers, for the conveyance of fresh meat. As before, the essential number of container flats was also pooled. In the third year of war, the demand for ordinary containers outstripped the supply, which was then supervised by the owning companies. To remedy matters, the Rolling Stock Control was put in charge of a pool of 14,000 ordinary containers and quickly improved the turn-round of the stock. Perhaps the most successful change made in railway equipment during the past twenty years was the provision of these containers for suitable traffics. Statement "E" shows that the book stock was increased by 2,250 to nearly 18,350 during the war years. What is more to the point, the average weekly number of containers despatched with loads advanced from 7,184 in 1942 to 7,943 in 1943, an increase of fully 10 per cent.

Specially Constructed Wagons

The practice had always been to leave to the owning railways the control of specially-constructed wagons for carrying traffics of exceptional nature or dimensions. During the war, it was found politic to pool airscrew wagons, and gunpowder vans, so that the Rolling Stock Control could distribute them to the best advantage. Between 700 and 800 special wagons, mainly owned by the Government, were in brisk demand for carrying bulky equipment, such as tanks, armoured fighting vehicles, and aircraft in cases. These were placed under the supervision of the Rolling Stock Control

which arranged the working of each unit, and kept a record of all journeys made. For once, the Control applied individualistic methods in making the best possible use of the stock enumerated below :—

Number of Wagons	*Description*	*Owners*
170	35-ton rectank	Railways
210	50-ton warflat	War Department
250	50-ton warwell	,, ,,
64	80-ton warwell	,, ,,
50	50-ton warwell	Ministry of Supply
25	20-ton deep case	Ministry of Air

At one stage, the U.S.A. Army lent 700 50-ton flat wagons to the British railways for handling large cases containing rail and road vehicles in parts for assembly in this country. The Control not only arranged all the movements required by the U.S.A. Army Transportation Corps, but employed the American wagons for our War Department's traffic until they were ordered overseas.

Number of Wagons Forwarded

In normal times a 5 per cent. increase in railway traffic was apt to lead to a shortage of empties in busy forwarding districts. As it happens, the number of wagons despatched under load in 1943 was 5 per cent. above the figure for 1940, when there was heavy pressure on the available rolling stock. Between the two years, the increase in the total number of railway and requisitioned wagons was at the rate of less than 1 per cent., but the average turnround of wagons at stations and sidings (excluding collieries) was reduced from 2·45 days to 2·26 days. The average wagon load of merchandise was at the same time raised from the pre-war level of 3 tons to more than 4 tons. These improvements in the release of wagons, and in their loading, went a long way to prevent occasional shortages of empties from becoming serious. The work performed by the wagons is analysed statistically in chapter 20. Here it will suffice to insert a table to show the number of wagons forwarded with all classes of traffic during the war years :—

Year	*Number of Wagons forwarded*	*Weekly average Number*	*Per cent.*
1940	42,938,955	825,749	100
1941	41,834,286	804,505	97
1942	43,791,352	842,141	102
1943	45,068,183	866,696	105
1944	43,762,334	841,583	102

In 1943, one in five of the wagons forwarded with general merchandise and minerals, other than coal, was a requisitioned vehicle. But for this use of requisitioned wagons for goods traffic, it would have been necessary to build a large number of open goods wagons as an emergency measure, over and above the 8,680 high-sided wagons added to stock by the end of 1943. At the same date, the Rolling Stock Control had 24,287 extra covered vans at its disposal, and over 1,000 more container flats. There had also been a gain of over 5,000 bolster and plate wagons, but the stock of mineral wagons had been reduced by fully 16,000, and 1,000 fewer cattle wagons were in traffic. Altogether, the Control had gained 20,000 wagons, but this position was only reached by keeping in service between 40,000 and 50,000 wagons which were not in good condition and would have been broken up if times had been normal.

Replenishing of Wagon Stocks

The retention of over-age wagons, coupled with poor supplies of material, and scarcity of labour for their maintenance, brought about a disquieting increase in the volume of repair work. Towards the end of the summer of 1943, no fewer than 46,000 railway-owned wagons, and 34,000 requisitioned wagons, had been set aside for repairs. That total of 80,000 crippled wagons was about 60 per cent. more than the number of unserviceable wagons in September, 1940. By October, 1944, the figure had advanced to 94,000, representing between 7 and 8 per cent. of the booked stock. Twelve months later 158,000 wagons were standing under, or awaiting, repair, more than three times the number out of use in 1940. This meant that in October, 1945, the busiest season of the year for freight traffic, the railways lost the use of 13 per cent. of their own wagons and 11 per cent. of the requisitioned wagons. They were driven to convert certain sections of double track to single line, and to close some sections altogether, in order to provide storage for the unserviceable vehicles. Apart from the effect of these accumulations of broken-down stock on the supply of wagons, their existence hampered train working considerably.

The weeding out and replenishing of wagon stocks will be one of the difficult post-war problems. During the emergency, as a corollary to centralised control, the four railways jointly examined the wagon situation year by year and drew up a combined building programme. This procedure ensured that the workshops of all the companies concentrated on constructing wagons of the types which the Rolling Stock Control found to be in keen and persistent demand. In the case of requisitioned stock, there had been a loss of about 6,000 wagons by the end of 1943, mainly owing to with-

drawals from the pool for internal use at collieries and works. Many other wagons were ready for scrapping, and to refresh the stock, the Minister of War Transport, in 1943, authorised the construction of 10,000 end-door mineral wagons. These will be more efficient vehicles than the requisitioned wagons which have fallen out, as they have a plated capacity of 16 tons instead of the 13-ton limit of the standard end-door coal wagons.

Wagon Sheets and Ropes

One of the striking traffic trends of wartime was the abnormal expansion in the volume of merchandise needing protection from the weather. We have seen that covered vans were much in request, and the demands for wagon sheets were equally insistent. Now sheets have a short working life and at first the Stores Superintendents, who manage the sheet factories belonging to the railway companies, had great difficulty in obtaining suitable materials for the manufacture of replacements. After many experiments, they found fairly good substitutes for the canvas used in peace-time and, in spite of the scarcity of labour, they had enlarged the working stock by nearly 127,000 sheets, or 38 per cent., by December, 1943. Simultaneously old-standing arrangements for the repair of sheets were revised, with the object of getting repaired and re-dressed sheets quickly into traffic again, without regard to the ownership in the individual factories. In other words the principle of common user applied to the workshop facilities, as well as to the sheets. Another interesting development was the issue of the Railway (Sheeting of Traffic) Order, 1940, which is reproduced in Appendix 14, together with a covering letter from the Ministry of Transport to the R.E.C. The Ministry's instructions prohibited double sheeting, and enacted that a Port Emergency Committee could serve notice upon the railways to forward merchandise unsheeted. In either set of circumstances, the railways were relieved of liability for damage. The prohibition of double sheeting was cancelled on June 7, 1941, but the rest of the order remained in effect, and its provisions were enforced from time to time.

This account of the functions of the Rolling Stock Control may be rounded off by a reference to wagon ropes, which were indispensable for securing a large proportion of the loads of military equipment. In peace time, ropes were not used in common, and a debit went with each rope exchanged between two railways, to ensure its return to the owning company. The supervision of the Control replaced this old-fashioned system, and saved a great deal of clerical work, as the stock of ropes had to be augmented by

nearly 94,000, or 56 per cent. In this minor matter of distributing ropes, as throughout the whole range of its functions, the Rolling Stock Control acted as though the railways were unified. Summaries of reports from all corners of the railway system furnished the Control with a dependable conspectus of the position in respect of wagons, containers, sheets, and ropes. In considering these statements, the Control had the help of a reliable intelligence service. Through constant consultation with the traffic departments, it was fully posted about the questions of policy and priority, and about working difficulties which had to be taken into account in meeting requisitions from particular forwarding districts. The Control was thus able to decide impartially how stock could be distributed with the greatest benefit to the general movement of essential freight traffic, and proved to be one of the most successful of the agencies created to meet wartime conditions.

Maintenance of Private Owners' Wagons

A separate organisation was required to deal with the maintenance of the private owners' wagons, which had been requisitioned, and were worked harder than in peace time, their loaded mileage being practically doubled. For the purpose of keeping the wagons in a serviceable condition, the Government arranged to employ the facilities which existed at the private wagon repairing works scattered up and down the country. The responsibility for ensuring maintenance was placed upon the railways, which had to decide the extent of the repairs needed for each wagon, or to condemn wagons which were beyond repair. It was necessary to check all repair specifications prepared by private firms, and to pass wagons as fit for traffic when they came from the repair shops. The Chief Mechanical Engineers gathered together for this purpose a special staff of 770 wagon repair checkers and inspectors, who supervised repairs at 280 private works, and 900 siding depots, allocated for wagon repairs. The total number of repairs handled was about 2,000,000 a year. Each railway set up a control whose function was to distribute crippled wagons to the repairing points in an even and equitable manner. The main aims of these controls were to prevent an accumulation of wagons waiting repair at any place, to arrange that wagons were repaired close to the points at which they were stopped, and yet to use all works and depots to their full capacity.

A committee was established to guide the working of these arrangements and give decisions on matters of principle. The

Committee consisted of technical advisers and accountants, representing the railways, the wagon owners, and the wagon repairers, but it became evident that closer contact was desirable between the Ministry of War Transport and the wagon repairing firms. The gap was bridged by appointing five railway officers to act as liaison between the Ministry, the railways, and the repairers. These officers were known as Ministry of War Transport Wagon Repair Area Controllers. Each of them took charge of one of the five regions into which the United Kingdom was divided, watching the output of repairs, and dealing direct with the firms on all questions that arose in connection with the work. The Area Controllers reported to a Chief Controller in London, who acted as Adviser to the Ministry of War Transport, and to the R.E.C., on the wagon repair position generally. When labour difficulties became acute, the Chief Controller kept contact with the Ministry of Labour on the question of the supply of workpeople for the repairing firms, and sponsored applications for deferment of men liable to be called up for military service. As the repairers employed about 10,000 people, this additional responsibility was by no means a light one.

In peace time, it was not the general policy of the railways to repair private owners' wagons, but during the war the abnormal movement of traffic resulted in excessive strain on the private wagon repairing facilities in some districts, noticeably in Scotland. To overcome this difficulty, the railways repaired in their own works about 200,000 private wagons annually. A good deal of accountancy was involved in this transaction, and in other phases of the maintenance of requisitioned wagons. A considerable number of staff was constantly employed in the mechanical engineering departments in checking the repair accounts rendered by the wagon repairing firms. The magnitude of this task may be judged by the fact that the average annual cost of repairs was between £5,000,000 and £6,000,000. Unless the railways had organised the arrangements for operating and maintaining private owners' wagons in the thorough going manner described above, the Government could hardly have obtained the great benefits which accrued from the requisitioning of these vehicles.

STATEMENT "A"

BOOK STOCK OF RAILWAY-OWNED WAGONS ON DECEMBER 31, 1939 to 1944

Class	1939	1940	1941	1942	1943	1944
Open wagons	331,185	332,455	336,293	337,026	338,639	341,460
Covered wagons	125,344	130,709	136,543	144,044	148,944	150,018
Bolster and plate wagons ..	30,291	32,006	33,752	34,389	35,414	35,299
Cattle wagons	15,055	14,877	14,659	14,407	14,122	13,679
Mineral wagons	144,376	141,995	132,183	128,604	126,984	127,115
Total	646,251	652,042	653,430	658,470	664,103	667,571

STATEMENT "B"

BOOK STOCK OF REQUISITIONED PRIVATELY-OWNED WAGONS IN SEPTEMBER, 1939, AND DECEMBER, 1940 to 1944

Type	1939	1940	1941	1942	1943	1944
End doors	482,414	478,432	474,972	474,569	476,414	478,605
Side doors	85,036	83,470	83,226	83,704	84,133	84,248
Hoppered bottom doors ..	8,493	10,504	10,388	9,116	9,402	9,468
Coke	11,502	11,320	11,427	11,338	10,912	10,817
Not described	1,494	1,460	1,506	1,506	2,107	2,081
Total	588,939	585,186	581,519	580,233	582,968	585,219

STATEMENT "C"

BOOK AND WORKING STOCK OF WAGON SHEETS IN DECEMBER, 1939 to 1944

	1939	1940	1941	1942	1943	1944
Book stock	355,636	388,136	478,136	478,136	478,000	478,000
Working stock	345,202	355,189	392,472	446,139	457,658	413,600

STATEMENT "D"

BOOK AND WORKING STOCK OF WAGON ROPES IN DECEMBER, 1939 to 1944

	1939	1940	1941	1942	1943	1944
Book stock	185,000	219,500	220,000	234,500	267,500	276,700
Working stock	170,112	212,062	218,930	230,472	260,665	268,337

STATEMENT "E"

BOOK STOCK OF RAILWAY-OWNED CONTAINERS IN DECEMBER, 1939 to 1944

Type	1939	1940	1941	1942	1943	1944
Covered	10,549	10,966	11,723	11,817	11,994	12,848
Open	5,541	5,476	5,476	5,500	5,499	5,496
Total	16,090	16,452	17,199	17,317	17,493	18,344

CHAPTER 15

Wagon Demurrage and Wagon Standage Schemes

THE steps taken by the railways to improve the turnround of wagons are explained elsewhere, but the prompt loading and unloading of traffic depend largely upon the willing co-operation of those who forward and receive large tonnages. During the first months of the war, the Government and the railway companies appealed to traders to liberate wagons promptly in order to improve the supply at forwarding points. The railways worked overtime, and kept goods depots open on Sundays, with the object of freeing wagons, but this good example was not followed widely enough to improve the user of freight rolling stock. The Minister of Transport therefore issued the Railways (Demurrage Charges) Order (S.R. & O. No. 1822) on December 14, 1939, under which demurrage charges were increased and free periods decreased. The new regulations applied to both railway-owned and requisitioned privately-owned wagons, but not to wagons used for the conveyance of coal, coke or patent fuel where the traffic was controlled on a system agreed between the railways and the traders. The charge for demurrage on ordinary goods wagons was raised from 3s. 2d. a day to 6s. a day, and the penalty for detaining other types of wagons was advanced in much the same ratio. The free period allowed at stations before conveyance was reduced from one day, exclusive of the day on which the wagon was placed at the trader's disposal, to 24 hours after the wagon was at his service. Whereas two days had been allowed for unloading at stations, exclusive of the day of receipt by the trader of notice of arrival, the Order gave him only 24 hours after he received the notice. The free periods allowed on goods wagons at private sidings, docks, and wharves were cut down severely, and a drastic set of changes was introduced in the arrangements relating to coal and coke wagons.

The Order came into force on December 18, 1939, but met with keen criticism and some downright opposition. Many traders refused to pay demurrage charges on the ground that the free times allowed were totally inadequate and unreasonable. Great stress was also laid on a statement made by the Minister of Transport to the House of Commons on December 6, 1939. The Minister then explained that the regulations would be administered with due regard to any genuine difficulties which traders and

agriculturists might have in giving strict compliance, provided that they could show they had taken all reasonable steps to adjust themselves to the needs of the situation. He went on to say that it was not the wish to penalise anyone who, through no fault of his own, was physically unable to comply with the requirements. These declarations strengthened the hands of representative bodies of traders in pressing for some modification of the Order. In March, 1940, it was agreed that, having regard to the short notice given when the increased charges and reduced free periods were brought into operation, and to the severe weather experienced in January and February, 1940, all demurrage charges incurred between December 18, 1939, and February 29, 1940, should be waived. It was further agreed that as from March 1, 1940, the free periods should be modified as indicated in Appendix 15. Though the old time allowances were not restored, the practice of calculating the demurrage " day " as 24 hours from 6 a.m. was reinstated.

Generally speaking, these concessions failed to satisfy traders, and there was a concerted refusal to pay accounts rendered on the fresh basis. The outstandings at one time amounted to over £5,000,000, but long and troublesome negotiations with the principal trade associations led to compromised settlements of the charges incurred up to agreed dates. A " List of Circumstances " was drawn up covering points which might be taken into account in considering appeals for allowances from demurrage charges subsequently incurred, and so giving effect to the policy enunciated by the Minister of Transport in the House of Commons.

In the course of the negotiations, the British Iron & Steel Federation, and certain large industrialists, urged that before the war raw materials were carried in private owners' wagons, which formed part of the plant of the undertakings and were used as storehouses on wheels. Charges had of course never been raised for the detention of these wagons, and the amount of compensation for their wartime requisitioning was only a fraction of the demurrage which the owners were called upon to pay. In order to remedy this grievance, wagon standage schemes were introduced in February and March, 1941, under which traders were charged on an averaging system for the detention of wagons carrying raw materials to blast furnaces, steel and chemical works. Later, the basis of the schemes was widened to include both inward and outward traffic conveyed in railway-owned and requisitioned wagons, as well as empty wagons supplied for outward loading, and any private siding owner could ask to have a suitable arrangement adopted at his works. The principle of applying the system of averaging was approved by the Minister of War Transport in two Orders—S.R. & O.

No. 487, April 2, 1941, and No. 776, April 21, 1942, and the method of calculating excess standage charges is explained in the statement at the end of this chapter.

At works where the scheme applied, it was not necessary to record particulars of individual wagons. Everything turned on the average terminal user time of wagons, and, having a statement of the wagon position before them daily, private siding owners formed the habit of watching the working closely. The turnround of wagons was thus speeded up. The average standage time of inward wagons for all the firms within the scheme was 1·9 days in January, 1943. A year later, the average user had fallen to 1·7 days. The railways had a stiff battle to fight before the amended demurrage regulations, and the wagon standage schemes, were brought into smooth working order, but the contest was worth while. An energetic advertising campaign was waged at the same time to keep the need for releasing wagons before the public, and the summation of so many sharp stimuli undoubtedly helped the Inter-Company Freight Rolling Stock Control to get the best possible user out of the available wagon stock.

Over this problem of wagon distribution and turnround, British and American experience ran nearly parallel. In the United States, a freight wagon shortage was reported for every week of 1944, but only in the spring and autumn of the year was the situation critical. The annual grain movement, combined with heavy calls for the conveyance of military stores, threw a great strain on the supply of covered wagons in particular. In the early months of 1945, phenomenally stormy weather hampered railway operations, and made the wagon situation in the spring tighter than ever. The railways pulled through with the aid of measures akin to the policy adopted on the British systems. The organisation of the centralised wagon control was strengthened. The Office of Defense Transportation and the Association of American Railroads impressed upon traders and port authorties the need for regulating the flow of traffic and freeing wagons promptly. Those who did not respond to the appeals were mulcted in high demurrage charges, authorised from time to time by the Interstate Commerce Commission to meet special contingencies. For instance, the Commission's service Order 328, applicable from July to September, 1945, fixed demurrage charges on covered hopper wagons on an ascending scale, intended to be punitive because wagons of that type were in great demand. After the free period $2·20 per wagon per day was charged for the first two days' detention, $5·50 for the third, $11 for the fourth and $16·50 for each succeeding day. By dint of the united efforts of all the parties interested in the circulation

of freight rolling stock, the American railways carried more wheat, grain, and grain products during the first half of 1945 than in any like period of history—an achievement of vital consequence to the Allied nations, and to the liberated countries of Europe.

WAGON STANDAGE SCHEME APPLICABLE TO RAILWAY-OWNED AND PRIVATELY-OWNED REQUISITIONED WAGONS

Excess Standage Charge

The excess standage charge reflected the percentage ratio of wagons conveying traffic pre-war in (*a*) private owners' wagons and (*b*) railway-owned wagons. The charge applied to (*a*) was approximately the equivalent of the daily cost of requisitioned wagons, and to (*b*) the charges applicable under the Demurrage Regulations, a small reduction being made in this case to reflect concessions, which would otherwise be granted under the "List of Circumstances," justifying some allowance. The combination of the percentages at the appropriate figures gave the charge for the excess standage.

Procedure for the operation of Standage Scheme

(1) The standage scheme applied to all inward and outward loaded wagons and to empty wagons supplied to order for outward loading up to and including 21 tons capacity, but did not apply to specified special wagons.

Wagons of 15 tons capacity and over were treated as equivalent to 1¼ wagons.

(2) If in any week commencing on Monday and terminating on Saturday, both days inclusive, the aggregate of the number of wagons each day at an agreed recording time—

(*a*) standing under load
- (i) in the works (excluding wagons loaded and made available to the railways for despatch),
- (ii) on railway sidings adjacent to works, and
- (iii) at intermediate points, owing to the inability of the works to accept, and

(*b*) supplied empty at the order of the works for outward loading (counted once on the day of supply),

exceeded 1½ the number of

(*a*) Loaded wagons discharged at the works, and

(*b*) loaded wagons labelled and made available to the railways for despatch,

an excess standage charge was levied at the appropriate rate.

(3) Loaded wagons received at the works on Sunday or on official Bank Holidays in England and Wales or other agreed holidays in Scotland and not discharged on that day were included in the following day's total. Empty wagons supplied at the order of the works for outward loading and wagons discharged or loaded wagons despatched on Sunday or on official Bank Holidays in England and Wales or other agreed holidays in Scotland were added to the totals for the previous working day.

(4) Each week stood by itself and in the event of there being a credit in any week it was not permissible to use this to reduce debits which might have arisen in other weeks, nor were any allowances granted in respect of excess standage charges incurred except in abnormal circumstances.

CHAPTER 16

Locomotive Position

At the outbreak of the war, the main-line railways had a stock of 19,512 locomotives, consisting of :—

11,806 steam tender engines ;
7,592 steam tank engines ; and
114 electric, diesel, petrol, " Sentinel," and narrow-gauge locomotives.

In the 10 years from 1929 to 1938, inclusive, the average number of new locomotives put into service annually was 430. During that period, locomotives of obsolete types had been scrapped so freely that the total stock was reduced by over 3,500 engines, but its quality had been improved and the number of engines under, or awaiting, heavy repairs had been reduced by nearly 30 per cent.

Programmes of New Construction

In 1939, the railway workshops were busy on a building programme, which had been drawn up to meet peace-time requirements. With the coming of war the pressing need was for heavy tender engines to haul long trains, and the programme was modified to allow the shops to concentrate, as far as practicable, on the building of 4–6–0 mixed traffic engines and 2–8–0 freight engines. In the six war years, 1939 to 1944, out of a total construction of 1,017 tender engines, 227 were of the mixed traffic class and 472 were of the 2–8–0 type. The War Office was anxious that the railways should have a large stock of standard heavy freight engines, which could be drawn upon in case of emergency for use overseas, and the Ministry of War Transport therefore decided, in December, 1941, that for the time being all heavy engines built by the railway companies should be of the L.M.S.R. 2–8–0 type. Apart from engines turned out from the L.M.S.R. shops, the other companies constructed 245 locomotives of this type on behalf of the L.M.S.R., of which 140 were lent to the G.W.R. and L.N.E.R. for temporary use. In addition, the North British Locomotive Company built 50 of these 2–8–0 locomotives for the L.M.S.R. In 1939 the Ministry of Supply had ordered engines of the same design from private contractors, for service with the B.E.F. in France. In the late autumn of 1940 the first batch of these engines was ready and,

as there was no longer an outlet for them on the Continent, 53 were lent for a time to the L.M.S.R., which in turn transferred 25 to the Great Western.

During these six years of war, the programme of new construction in railway workshops also included 267 tank engines. Nearly 200 of these were of the 0–6–0 type, all but nine of which were built at Swindon. In addition, the L.M.S.R. and L.N.E.R. constructed 50 diesel engines. The average number of steam locomotives of all classes built during the war period was 214 a year. The largest output in any one year was in 1944, when the railways were relieved of a good deal of the armament work, which they had been carrying out for Government departments, and produced 322 locomotives. Between January 1 and August 11, 1945, the railway workshops turned out 118 tender engines, 39 tank engines, and 5 diesels—a total of 162, which included 14 Pacific locomotives of special design for use on the Southern Railway.

Locomotives Requisitioned by the Government

In July, 1939, the Ministry of Transport indicated that the War Office would require 800 engines for service abroad within the first twelve months of war. Though obviously the railways would need all their locomotives for handling extra traffic at home, it was agreed that some 100 locomotives of the G.W.R. 0–6–0 freight tender type should be transferred to the War Department for use overseas. To compensate the Great Western for the loss of traction power, the L.M.S.R. and L.N.E.R. each supplied 40 engines of a similar class, while the Southern Railway undertook to prepare a proportion of the locomotives which were going to the Continent.

The Government frequently applied to the railways for the loan of locomotives for shunting depots and camps in this country, as well as for defence purposes. Diesel locomotives were well suited for much of this work, and 17 of these machines were transferred in 1939 and 1940—14 from the L.M.S.R., and 3 from the S.R. The L.M.S.R. had already made over to the War Department 8 steam shunting engines, which were lost in the retreat from France. The L.N.E.R. had no diesels, but provided 35 tank engines, of which 16 worked armoured trains engaged in patrolling near the east and south coasts. The Southern Railway found another 20 shunting units for use at Admiralty and War Department depots, and on light railways in its area.

In 1941 further demands came for engine power for use overseas. The L.M.S.R. supplied 14 diesel-electric locomotives for service in the Middle East and 4 smaller units. That company also furnished 43 heavy freight locomotives for hauling supplies to Russia over

the steep gradients of the Persian Railways. The L.N.E.R. gave up 92 of its 2–8–0 Class " 04 " engines for the same purpose, while the Great Western and Southern assisted in converting the locomotives for the burning of fuel oil. It is understood that the British locomotives did valuable work at a critical stage of the war.

Altogether, 298 steam locomotives, and 45 other units were handed over to the Government for the period of the war. Up to the end of 1942, the railways also hired a considerable number of shunting engines to the War Office and other Government departments for short terms.

Utilisation of Locomotive Stock

In view of the withdrawal of locomotives for military needs and of the slow progress of new building, owing to shortage of men and materials, energetic measures were taken to get as much work as possible out of the existing stock. Engine rosters were overhauled and waste time was cut down. Engines were kept in traffic for longer periods between shed examinations. At junctions between railways, engines were often used in common, and, in numerous instances, were worked beyond the normal exchange points, with the object of saving power and staff. Coaling plants, repair facilities, and breakdown trains were also used for the common good. Determined efforts were made to speed up repairs, both at the workshops and at sheds. The machinery and layout at a number of sheds were improved and spare parts were supplied to depots on a liberal basis. The loss of experienced fitting staff and shortage of materials were, however, serious hindrances. Before the war, 15·8 per cent. of the operating locomotive stock was under, and awaiting, heavy repairs at shops, or light repairs at sheds. By the end of 1941 the percentage had fallen to 13·5, but two years later it rose to 15·2. It stood at 14·6 at the end of 1944, but had increased in August, 1945, to 16·3.

Several reasons accounted for the accumulation at December 31, 1943, of over 3,100 engines in need of repair. At that date, the total operating stock of locomotives was only 3 per cent. larger than the 1939 stock, and was persistently overstrained in coping with record traffics. The average hours worked by a locomotive in 1943 were 6 per cent. in excess of the pre-war figure and many engines were out on the road seven days a week. A number of engines, which would have been scrapped in normal times, were retained in traffic, and frequently required attention. Some of these veteran locomotives were kept because the three " heavy " companies had assumed an obligation in 1938 to provide steam power to operate the electrified surface lines of the Southern Railway,

and the L.P.T.B., in the event of enemy action interrupting the supply of electric current. At first, this commitment involved the transfer of over 200 tank engines, but by 1942 the Southern Railway completed arrangements for alternative supplies of current in case of emergency, and the requirement was reduced to 79 engines for L.P.T.B. services. Even the provision of the smaller number would have been a strain on the companies' resources, but luckily the emergency never arose. At one stage, the importance of reducing the repairs list became so acute that one or two of the principal workshops concentrated on heavy repairs, to the exclusion of new building. That policy was, no doubt, useful for a short term, but deferred the replenishing of the stock with up-to-date machines. Whatever moves were made, the officers in charge of motive power were faced with a difficult situation throughout the war, but in 1943 they did receive a substantial, if temporary, measure of relief.

"Austerity" and American Locomotives

In 1942 an "Austerity" 2–8–0 locomotive was designed by the North British Locomotive Co. Ltd., under the direction of the Ministry of Supply. The Chief Draughtsman of the L.M.S.R. acted in an advisory capacity, as the Ministry wished standard details of the W.D. 2–8–0 engine to be incorporated in the new design, so that many parts of the two engines would be interchangeable. The "Austerity" design, however, embodied a parallel boiler and round-top firebox instead of a conical boiler with a Belpaire firebox, and fabricated parts were freely used in place of steel castings. There was no mistaking the new engines when they began to come from the works of the North British Locomotive Company and the Vulcan Foundry in 1943. As they were turned out in advance of military needs, 450 were lent to the railways, and did excellent service until they were withdrawn for shipment overseas between October, 1944, and April, 1945. Nearly 500 more "Austerities" were "run in" by the L.N.E.R., and transferred to War Department depots by that time. The L.M.S.R. and L.N.E.R. likewise "ran in," to the extent of 10,000 miles, 100 engines of similar design, but with a 2–10–0 wheel arrangement, which the Ministry of Supply ordered for hauling slow, heavy trains over difficult routes.

Early in 1943, railwaymen were able to compare the "Austerities" with American 2–8–0 freight locomotives, built for the use of the U.S. Army on European railways. The first American locomotive was handed over to the G.W.R. at Paddington with some ceremony on December 11, 1942, and the U.S. Army authorities

arranged for the railways to use 398 engines until they were wanted for military operations. The engines were landed at Cardiff, Birkenhead, Manchester, Glasgow, Hull, and London Docks, and certain fittings were modified in British railway workshops to suit operating requirements in this country. The L.M.S.R. supervised the alteration and allocation of the locomotives on behalf of the R.E.C., but the four main-line railways and the L.P.T.B. co-operated in making basic parts of the extra equipment. The number of engines modified by each railway, and the number allotted to it for running purposes, are set out below :—

	Number of Engines modified	Number of Engines allotted
G.W.R.	100	174
L.M.S.R.	144	50
L.N.E.R.	117	168
S.R.	38	6
	399	398

All these engines were at work by the end of 1943, and the allocation greatly strengthened the motive power of the L.N.E.R., which also secured the temporary use of 350 " Austerities," leaving 50 for the L.M.S.R. and 50 for the S.R.

The American locomotives had a distinctive appearance, when contrasted either with the " Austerities " or the W.D. 2–8–0 engines. Their bar-type frames and high-pitched boilers, together with the running board placed high enough to give access to the sand-boxes on top of the boiler barrel, exposed to view all running gear, stays, and piping. The locomotives gave satisfactory service, and the running staff quickly became accustomed to the differences in the footplate fittings. A second lot of 358 American machines was imported at western ports before the invasion of Europe. These locomotives were not turned into general traffic. They were serviced at Ebbw Junction, where a shop was placed at the disposal of the U.S. Army Authorities by the Great Western, and then prepared for shipment. A similar course was taken with 24 American 0–6–0 tank engines, which were found to require some adjustments. The first one was modified at Swindon, but the rest were altered by a private firm, which was given facilities in a Great Western shop at Worcester. By October, 1944, the whole of the American locomotives were returned to the U.S. Army, whose military railway troops were busily engaged in repairing and operating long stretches of Continental railway lines. The temporary employment of the engines from the other side of the Atlantic alongside the " Austerities " was a picturesque episode in the history of British locomotive practice, and a fresh experience for many of the

mechanical engineering and locomotive running staff. By good luck, the engines came to hand in large numbers just when they were most wanted to deal with the growing traffics of 1943, and their use tided the railway companies over a period when their own locomotive stock could hardly have met all demands for motive power.

Supplies of Locomotive Coal

British railways consume between 15 and 16 million tons of locomotive coal a year. In normal times they could insist upon the collieries delivering coal of reasonably good quality, but during the emergency they had to accept large tonnages of inferior fuel. On occasions supplies were so scanty that the locomotive running departments were compelled to use household and opencast coal, briquettes, and gas coke. Frequently, the use of indifferent fuel affected the steaming of locomotives, and trains failed to keep time, though instructors were appointed to train firemen in the most efficient methods of firing.

In order to meet exceptional requirements, the practice of the railways was to keep reserve stocks of coal at their locomotive depots, equivalent to at least four weeks' consumption at the current rate. In January, 1944, these reserves amounted to over 1,218,000 tons, stored, as a general rule, in stacks on the ground. Towards the end of that month, the Ministry of Fuel & Power curtailed deliveries of coal to the railways, and during the next ten or eleven weeks about 315,000 tons were lifted from stack. Another large hole in the stacks was made by the lifting of 205,700 tons in December, 1944, and January, 1945, when severe weather cut down deliveries from the pits. In the following February, stacks contained only 613,000 tons, equal to two weeks' consumption, which the Ministry agreed was a necessary reserve against contingencies. At the end of the war, this essential reserve had dwindled to 446,000 tons, sufficient for only a week and a half. The railways were by no means singular in having acute difficulties over locomotive coal supplies during the war. Most Continental countries, Eire, and South America had a troublesome experience, and even the United States railways were reduced to using much inferior fuel, in spite of the vast output of their coalfields.

CHAPTER 17

ADDITIONAL FACILITIES FOR WARTIME TRAFFIC

BETWEEN the amalgamations of 1923 and the outbreak of war, the capacity of the British railway system was enlarged appreciably. Not only were many new works carried out through the normal procedure of reviewing traffic facilities at places where freedom of movement was impeded for any reason, but three special programmes of new construction were undertaken. First, the Finance Act of 1929 abolished the railway passenger duty on fares in excess of 1d. a mile, but stipulated that 90 per cent. of the capitalised value of the revenue, amounting to about £400,000 a year, was to be spent on schemes of development. This meant that the companies took in hand works costing about £6,600,000. Secondly, the Development (Loan, Guarantees & Grants) Act, also passed in 1929, made the companies eligible for interest payments of varying amounts, spread over a period of not more than 15 years, on the capital spent on projects which would find work for large numbers of unemployed, but which would not have been undertaken without some assistance in financing them. A third and larger programme of railway and dock extensions was launched in 1935, when the Railways Agreement Act constituted the Railway Finance Corporation to arrange, under Treasury guarantee, a loan of £27,000,000 at 2½ per cent. interest, repayable within 15 or 16 years. Several electrification schemes were included in these programmes, and two of them have not been completed, but passenger and goods stations, marshalling yards, relief lines, signalling installations, and dock equipment were modernised at many key points. Locomotive power and rolling stock were likewise strengthened, and thus the railways were in a better position to cope with war emergencies in 1939 than they were in 1914.

EXTENSIONS AUTHORISED BY THE MINISTRY OF WAR TRANSPORT

Even so, it was realised, as soon as there appeared a risk of peace being broken, that the railways would be faced with new problems, such as the diversion of traffic from east to west coast ports and the blocking of busy routes by air attacks. Lines which

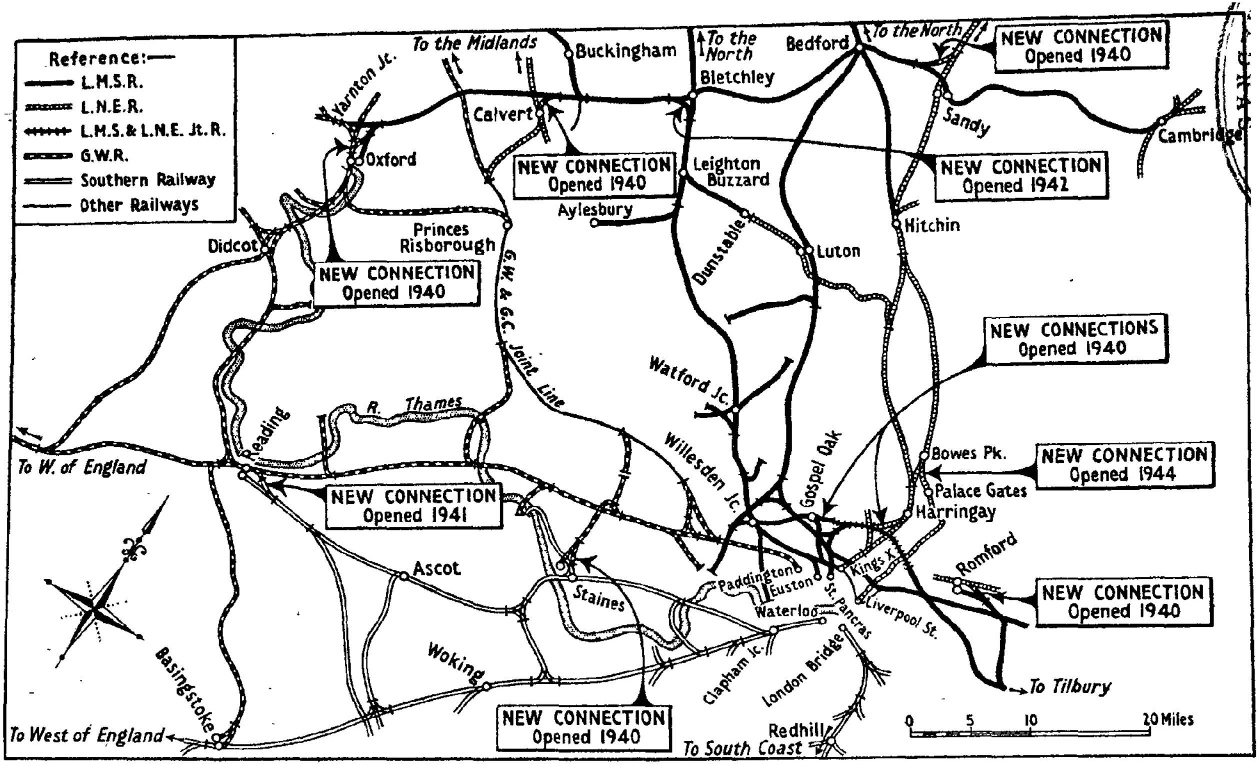


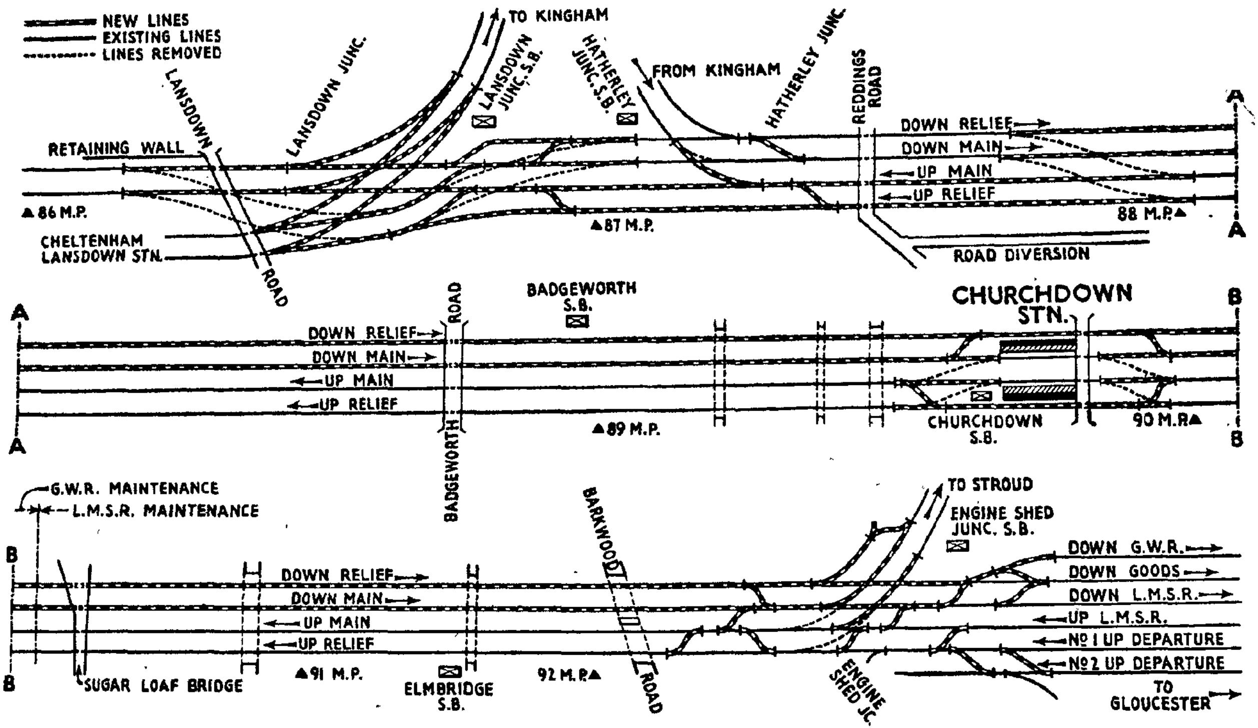
Diagram showing new connections to give alternate routes across the Thames

were adequate for peace-time requirements might be overtaxed under war conditions, and exchange junctions between companies might become choked by abnormal currents of traffic. In particular, alternative routes for taking traffic across the River Thames would have to be contrived. Plans and estimates of works to meet some of these contingencies were hurriedly prepared, but, before long, numerous schemes of greater magnitude were devised to deal with the mounting tonnages of merchandise, described in our account of Freight Train Working and in the Review of Railway Operating Results.

In normal circumstances, the companies would have had no occasion to frame these programmes of new works and expected the Government to bear the costs of carrying them out. On the other hand, the companies were prepared to consider, at a later stage, whether they could profitably take over individual works, at an agreed valuation, as betterments of their properties. The practice was to submit a detailed justification of each proposal, as a wartime measure, through the R.E.C. to the Minister of War Transport, who obtained Treasury approval for the expenditure and authorised the company concerned to proceed. The Government insisted that, as far as practicable, the companies should confine their proposals to schemes which could be carried through in 6, or at most 9, months time. This stipulation added to the responsibilities of the Engineering Departments, which had to strive to complete each work by a fixed date. Only in a few cases, where exceptional difficulties occurred, did they fail to keep to the scheduled time. The importance and variety of the works, which were constructed so expeditiously, will be gathered from the detailed comments which follow.

Alternative Routes for Traffic across the Thames

In normal times, four routes were used for the exchange of traffic between the north and south of the Thames in the London area. These were over the Metropolitan Widened Lines, the East London Railway, the West London Extension Railway, and the North & South West Junction Railway, to Kew East Junction. As the first two routes were liable to be put out of action simultaneously, a junction was constructed at Harringay between the L.N.E.R. and the Tottenham & Hampstead Joint Line. A second junction was laid in at Gospel Oak between that line and the L.M.S.R. Hampstead Junction line. The L.N.E.R. could then send traffic from the North and East to the Southern Railway, either by the West London Extension, or by the North & South West Junction

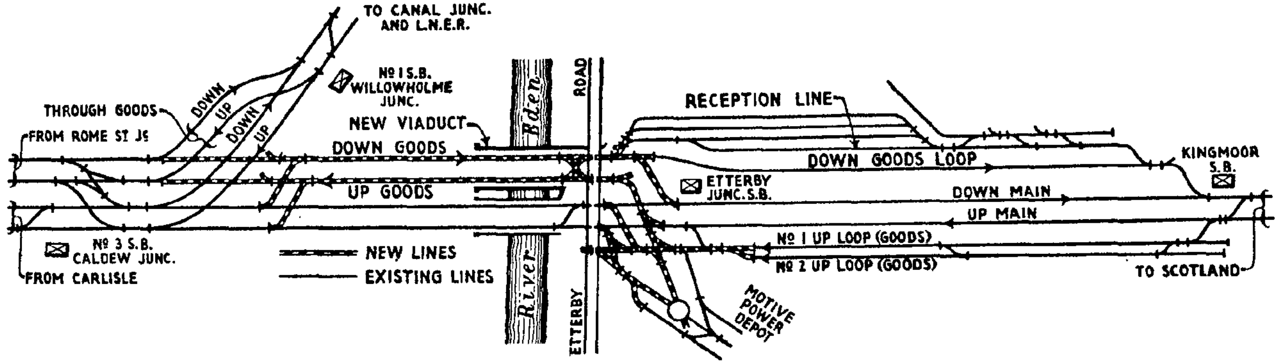


Cheltenham-Gloucester quadrupling, L.M.S.R. and G.W.R.

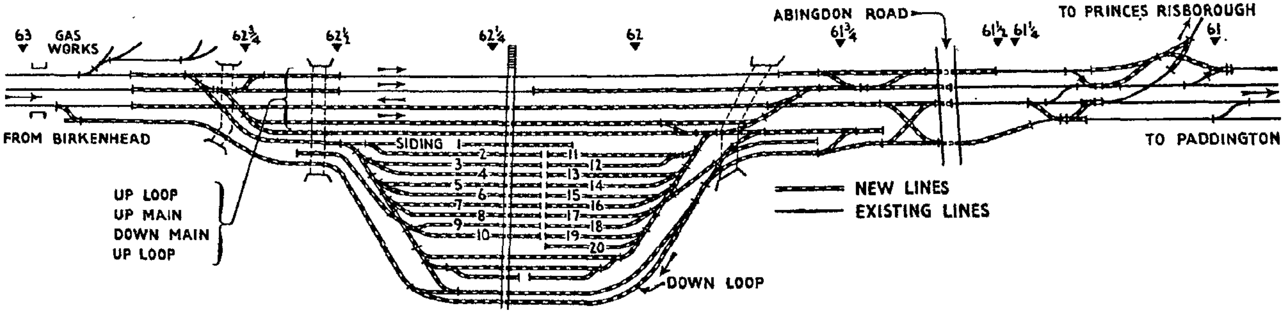
Railway and Kew East. A route was also open to the G.W.R. at Acton. These alternative means of exchange proved their worth during the air attacks between September, 1940, and May, 1941. A minor work was a junction between the L.M.S.R. and L.N.E.R. lines at Romford, which constitute a substitute for the route *via* Barking between these systems.

Outside the London area, the natural route for much of the traffic from the north to the south of the Thames was over the Great Western line through Leamington, Banbury, Oxford, and Reading, but its capacity was too limited to cope with any large tonnage diverted from the London Junctions. Roundabout routes had therefore to be mapped out, and hastily prepared, at considerable expense, so that, in an emergency, diverted trains could pass in a wide sweep across country. Arrangements were made to work traffic from the Great Northern and Great Eastern sections, L.N.E.R., *via* Sandy, Bedford, Bletchley, Claydon, Calvert, Staines Moor, Merstham, and Tonbridge to the Eastern Section of the S.R. Traffic for the Central Section of the S.R., from the same region of the L.N.E.R., and from the L.M.S.R., was also worked to Bletchley, and thence by Oxford, Basingstoke, Eastleigh, and Chichester, while L.N.E.R. traffic reached the Western Section of the S.R., *via* Claydon, Calvert, Northolt Junction, and Staines Moor. To make these routes practicable, connections were provided at Sandy, Calvert, Oxford, Yarnton, and Staines Moor. Running and yard facilities were also improved at other places. At the same time, steps were taken to amplify the exchange through Reading between the G.W.R. and S.R. A new spur line connecting these systems gave another route for traffic from the L.M.S.R., *via* Oxford, the Great Central Section of the L.N.E.R., and the G.W.R., to the eastern section of the S.R. This Reading Spur, as it came to be termed, gave the G.W.R. another means of reaching the South Lambeth district, and could pass forward wagons from the L.M.S.R. for the western section of the S.R.

The plan on page 116 illustrates the nature of this problem of communications, and the scope of the works which were needed to solve it. Somewhat analogous was the question of spreading risks of damage by decentralising merchandise traffic from the main London terminals. The large goods stations were relieved by switching traffic over to places on the outskirts, such as Neasden, Hendon, Tufnell Park, East Croydon, and Wimbledon. The change-over meant that station facilities at the suburban depots had to be extended, and the cartage force adjusted to suit the revised programmes for collecting and delivering goods.



Extension of goods line between Caldew Junction (Carlisle) and Etterby Junction (Kingmoor), with new viaduct over River Eden, L.M.S.R.



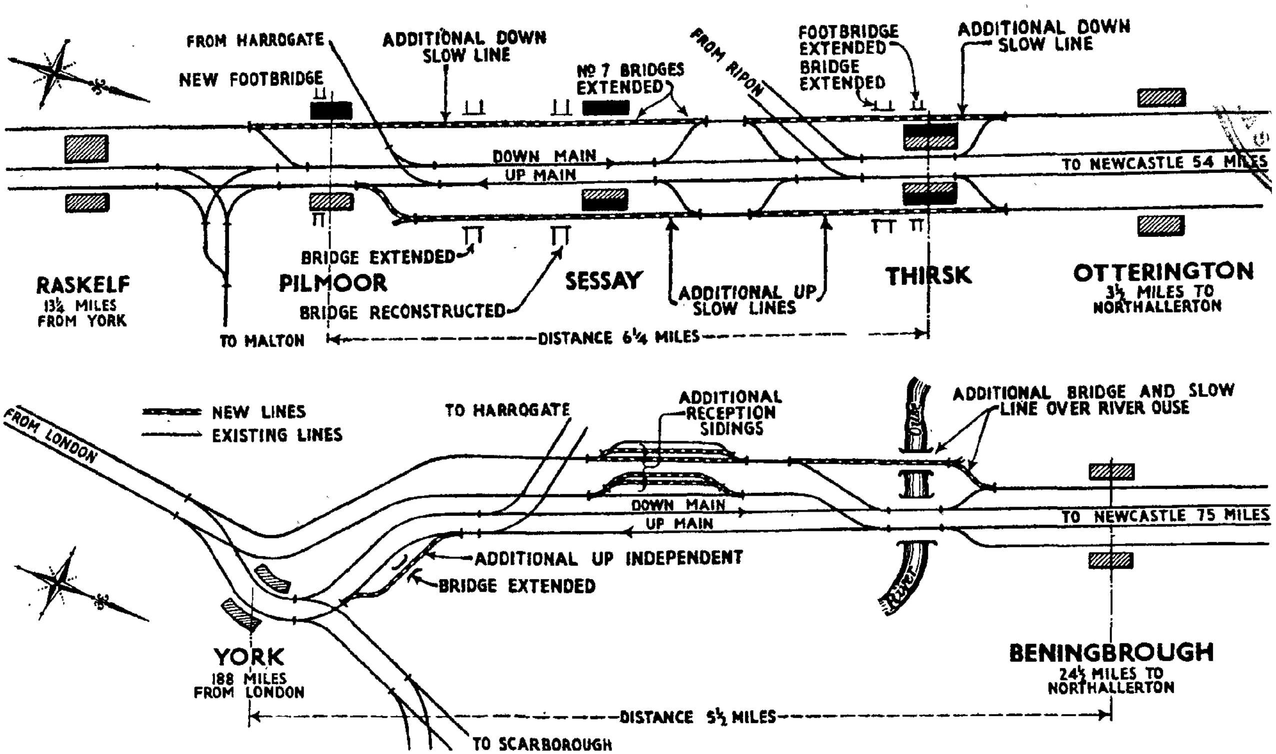
New marshalling yard and associated works, Kennington Junction to Oxford South, G.W.R.

Widenings, Running Loops, and Marshalling Yards

Of the 20,200 route miles of railway open in 1938, nearly 1,850 miles carrying a dense traffic were equipped with more than two lines. Double track sufficed for about 10,800 route miles, and the remaining mileage was single track. The vagaries of wartime developments overweighted many sections of double and single line. More train paths were urgently wanted, and, in extreme cases, could be obtained only by widening fairly long stretches of railway. In some instances, additional marshalling yard accommodation was provided, with the object of working freight trains clear of the running lines, but, on the majority of the overburdened sections, relief was afforded by constructing passing loops and refuge sidings. A brief description of a few typical schemes will show the nature of the difficulties which had to be overcome. The whole of the new lines and sidings were constructed by the engineers with trifling interruption to train working over the old tracks.

The Ministry of War Transport, impressed by the need for better transport facilities for emergency traffic to and from South Wales, took great interest in a scheme for doubling the two existing lines between Gloucester Engine Shed Junction and Lansdown Junction, Cheltenham. Half of this section of 6 miles is owned and maintained by the G.W.R., and the other half by the L.M.S.R., which undertook the construction of the whole length of the widening, except the permanent way. The work was begun in September, 1941, and traffic was run over the widened lines in August, 1942. The satisfactory nature of this performance may be judged from the fact that the earthwork involved the excavation of over ¼-million cu. yd., of which the bulk was required for embankments. The longest cutting was 1 mile 48 chains in length, and another cutting, 58 chains in length, reached a maximum height of 40 ft. Owing to the water-logged condition of the natural ground on which the embankments were constructed, a large amount of surface drainage had to be carried out before tipping could be commenced. The longest embankment measured 1 mile 24 chains. The remainder of the constructional work included the extension of 7 underbridges, 5 new openings under existing overbridges, the extension of 10 culverts, varying from 2 ft. to 8 ft. wide, and long lengths of retaining walls, the largest being 860 ft. in length, and varying in height from 5 ft. to 25 ft. above rail level. Five new signal boxes were erected, and the track laying comprised 11½ miles of plain track, and 3¼ miles of points and crossings, as indicated in the diagram on page 118.

Carlisle is at all times the principal gateway between England



New works on the L.N.E.R. mainline between York and Northallerton. Above: Additional slow lines from Pilmoor to Thirsk. Below: Additional reception sidings, and slow line over River Ouse at York

and Scotland, being not only the converging point of the two L.M.S.R. routes, which cross the Border, but an important exchange junction with the L.N.E.R., which also works trains through the yards there between the North Eastern area and its lines in Scotland and Cumberland. The pressure of wartime traffic overtaxed the accommodation, and, in order to avoid train delays, both of the northern companies carried out extensive works. Just north of Carlisle, the L.M.S.R. main line to Scotland crossed the River Eden by a two-track viaduct. An alternative means of crossing the river was essential for the improvement of freight train working, and for security reasons. A new bridge was therefore thrown across the river alongside the old structure, and carried an extension of the goods lines from Caldew Junction, south of the river, to Etterby Junction, on the north bank, as shown in the diagram. Improvements at Kingmoor motive power depot, north of the bridges, facilitated the movement of engines to and from Carlisle. The new viaduct consists of seven main spans of 46 ft., with two approach spans of 35 ft. each. The piers are of octagonal concrete piles, arranged in two rows of five each, driven through an average depth of 19 ft. of clay, sand, and gravel. Substantial concrete caps are provided to the piles to carry the superstructure of pre-cast concrete beams 4 ft. 3 in. deep and 2 ft. wide. An interesting feature of the work was the pumping of wet concrete from the mixer to the point of user. South of the river, the structural work included a bridge of four spans of 22 ft. each for flood openings, and the widening of the formation to provide for the two additional lines involved about 15,000 cu. yd. of filling for embankment, about half of which was obtained from the excavation at the south end of Kingmoor Yard. The prefabricated concrete was manufactured at the company's Newton Heath (Manchester) shops. At Carlisle, the L.N.E.R. was concerned mainly with the provision of standage sidings as a gathering ground for wagons bringing munitions from ordnance depots north of the Border. Many of the wagons were ultimately despatched to the South over the L.M.S.R.

The largest programme of extensions on the L.N.E.R. was carried out between Northallerton and York. That stretch of main line is used by the East Coast passenger trains, and important through goods trains between England and Scotland. It also carries the bulk of the traffic originated by the heavy industries on the Tyne, Wear, and Tees for destinations in England and Wales. The diagrams opposite indicate that portions of the line had been widened to three or four tracks, but bottlenecks were left at Thirsk, Sessay, and Raskelf stations, and at Skelton Bridge, where the rail-

way crosses the Ouse, north of York. When the convoy coal trains began to run, it was found impossible to give them priority of passage without causing serious delay to passenger and goods trains, and at times restriction had to be placed on the acceptance of manufactured steel and other commodities essential to the war effort. This situation was remedied by carrying out a comprehensive scheme in two stages.

First, additional up and down lines were provided between Pilmoor and Thirsk for a distance of approximately six miles, as shown on page 122. The work involved, among other things, the demolition and rebuilding of the platforms of Pilmoor and Sessay, and the partial demolition of the station at Thirsk, with the conversion of the existing platforms into island platforms. Nine culverts, five underbridges, four overbridges, and one footbridge were extended on each side of the railway ; three overbridges were closed and filled in ; two other bridges, being replaced. There were also extensive signalling alterations for the new up and down lines, including one new signal box, and extensive alterations to three other boxes. The second stage, also shown on page 122, was the provision of a single line bridge over the River Ouse, on the down side of the bridge carrying the main line. Immediately south of the bridge, a group of sidings was constructed on the down side of the main lines, with a view to relieving the congested state of York marshalling yards, and liberating locomotives promptly from incoming trains from the north. Facilities for coaling, watering, and turning engines were provided at the new sidings, so that they could be prepared for a return journey without running light to York locomotive depot, a mile or more to the south. The accommodation in the existing York yard, adjacent to the passenger station, is rather cramped, and cannot be extended. In the coming period of reconstruction, it may be found economical to build a spacious marshalling yard at Skelton Bridge, and the emergency works have been designed to fit into a comprehensive scheme of that character, for which there is ample ground available.

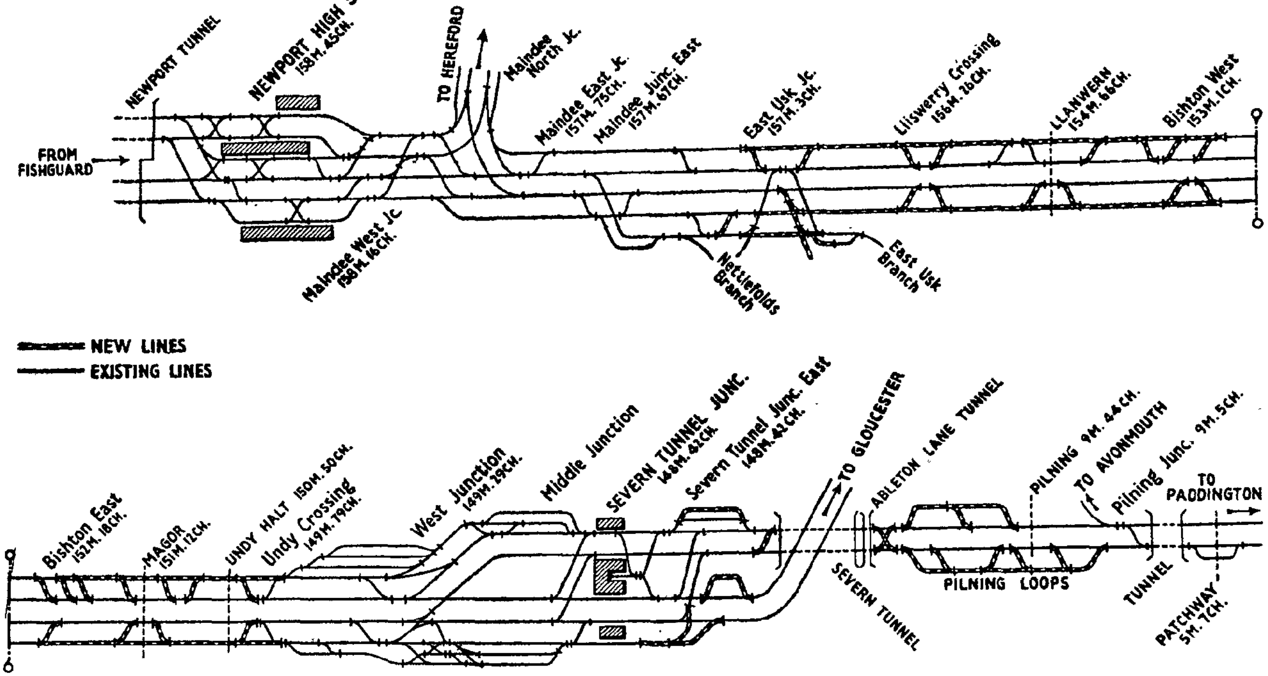
The Southern Railway performed an interesting piece of work at Rochester. The old railway bridge over the Medway had been out of use for many years, but was reconditioned to serve either rail or road traffic, in the event of either of the other two bridges over the river at that point being destroyed. The reconditioned bridge is 700 ft. long, and carries a double track. An entirely new floor, including steel cross girders, rail girders, and longitudinal deck timbers, was made. In addition, connecting bridges were constructed at each end, to permit road traffic passing on to the bridge from the existing road bridge. The work required 450 tons

of new steel work, and 12,000 cu. ft. of timber. As the structure had lacked attention during the long period of disuse, a detailed examination of the main girders was carried out, to ensure that no weakness had developed.

At Hinksey, south of Oxford, the Great Western laid down a new marshalling yard, and provided up and down loop lines between Oxford and Kennington Junction. This scheme, of which a diagram gives details, concentrated in one yard the shunting previously carried on in separate up and down yards, cutting out pilot trips which used to occupy the running lines unduly. Another example of a yard, designed to free the main lines from freight trains, and to relieve the strain on existing marshalling accommodation, is to be found on the L.N.E.R. at Connington, nine miles south of Peterborough. This gravitation yard consists of a group of 12 double-ended sidings and reception roads holding 930 wagons, with shunting necks, and the usual space for crippled wagons and brake vans. In the first place, the yard was constructed to relieve pressure on siding accommodation at places like Ferme Park in the London area, but its opening eased a state of congestion in the Peterborough marshalling yards. One great advantage was that many down freight trains no longer had to cross the main lines twice to enter and leave these old yards at New England, Peterborough.

Railway Facilities for Port Traffic

In the chapter on railway companies' docks, harbours, and wharves, mention has been made of facilities installed at ports. In addition, some of the routes serving west coast ports were expanded to cope with the abnormal volume of shipping traffic. The Great Western provided four lines between Newport and Severn Tunnel Junction, in place of the old double track, and also constructed extensive loops at Pilning, on the Gloucester side of the Tunnel, as shown in the diagram on page 126. More sidings were provided at Weaste Junction, Stott Lane, and Bridgwater Junction, Trafford Park, to hold wagons loaded to or from Manchester Docks. Extra sidings, to accommodate over 1,300 wagons of Liverpool docks' traffic, were laid down at Walton, and Halewood, on the Cheshire Lines, while standage for 475 wagons of Birkenhead shipment traffic was constructed at Hooton and other convenient places. Further relief was secured in the Birkenhead dock area by adapting the East and West Float Depot as a freight terminal, and, to facilitate the movement of traffic approaching from the south, the Great Western extended the layout of its lines at Wrexham.



Quadrupling of G.W.R. main line between Newport and Severn Tunnel; also Pilning loops

In Scotland, 14 running loops, and 22 relief sidings were constructed on the L.N.E.R. main lines between Edinburgh and Glasgow *via* Polmont and Bathgate. Though not specifically intended for shipment business, these facilities were useful for traffic passing through the Clyde ports, including the new military port of Faslane, near Rhu. Between Berwick and Edinburgh, a distance of 56 miles, another series of 16 loops was built at Ayton, Reston, Grantshouse, Innerwick, Dunbar, East Linton, Drem, Prestonpans, and Newhailes, to enable the East Coast route to convey the extra traffic which was crossing the Border in both directions.

Improved Facilities at Motive Power Depots

Owing to the exceptional demands for locomotive power, it was necessary to take all possible steps to turn round engines quickly at the motive power depots. With a view to reducing the time spent by engines at the sheds, facilities for coaling, watering, and ashdropping were improved at a number of depots, where pressure on the locomotive stock was intensified by war conditions. Newcastle (Heaton), Middlesbrough, and Edinburgh (St. Margaret's Depot) were among the places where a considerable amount of reconstruction was carried out.

Telephone, Telegraph, and Wireless Communications

The telephone and telegraph have come to play such a prominent part in railway working that it was of vital importance to keep these means of communication open, in spite of wartime contingencies. At a number of important centres, the exchanges were duplicated, and equipped with telegraph and teleprinter circuits, and a telephone switchboard carrying the principal lines. If the normal installation closed down in an emergency, the alternative facilities maintained contacts with the railway system and the outside world. In the event of a serious interruption of the railway circuits, arrangements existed for placing Post Office trunk lines, which are to a large extent laid under ground, at the disposal of the company concerned. For the most part, these Post Office lines served railway control centres, and several were permanently allotted to the railways throughout the war. Many extensions and improvements were made in the private installations of the companies, to cope with the growing number of calls on Government or other urgent business ; the larger schemes were authorised by the Ministry of War Transport. Additional Post Office lines were rented to deal with the great rise in the number of passenger train service enquiries from the public and members of the Forces. The erection of camps,

aerodromes, ordnance factories, and storage depots—often in country districts—also led to a marked growth of Post Office telephone calls, both inward and outward. In 1944, the use of the public lines by the railways for outgoing calls was about 50 per cent. higher than in the pre-war year 1938.

As a further precaution against an extensive breakdown in telephone and telegraph communications, the Government agreed to the use of wireless in emergencies, but restricted the transmission of messages to telegraphy. On the authority of the Ministry of War Transport, 100 wireless sets were purchased—16 for the G.W.R., 32 for the L.M.S.R., 30 for the L.N.E.R., and 22 for the S.R. These sets had a range of 50 miles, and were usually installed at fixed stations, though a number were fitted in specially adapted rail vehicles, and on road motor vehicles, ready for despatch to places where the ordinary wires were down. The wireless stations were operated, as a rule, by staff experienced in Morse telegraphy, but some men went through a course of training, and all operators had to understand how to send messages in code. Late in 1943, the Inter-Services Wireless Telegraph Security Committee decided that, in order to keep military plans secret, the railways were to use a new and complex cipher. This eleventh-hour change involved the selection and training of 855 people in ciphering duties, but by the spring of 1944 the railway wireless system was ready for action. On D-Day the railway network was idle to avoid the possibility of interference with military signals and at no time did an emergency require it to operate. That almost seems a pity after the railways had spent so much time and energy in perfecting the system, but a good deal of useful knowledge was gathered from the trials of the wireless equipment.

Cost and Extent of Emergency Works Programme

By the end of 1944, the Ministry of War Transport had given authority for a total expenditure of about £13,467,000 on additional works designed to improve operating arrangements on the main-line systems and the L.P.T.B. railways. In round figures, this expenditure was divided between the five undertakings in the following proportions :—

	£
G.W.R.	4,549,000
L.M.S.R.	3,335,000
L.N.E.R.	3,571,000
S.R.	1,625,000
L.P.T.B.	387,000
Total	£13,467,000

The main lines spent the bulk of the money on adding 98 miles of principal track to the 1938 mileage, and constructed 311 running loops, representing a further 165 miles of track. Extensions to marshalling yards and standage sidings accounted for 574 miles of sidings. These schemes involved much new signalling work, and countless adjustments of existing installations. In the aggregate, they represent a valuable addition to our transport equipment, provided that the quantity of post-war commercial traffic is sufficient to keep them in constant use.

The railways also carried out permanent way and structural works, for the use of the War Office and other Government departments, to the value of £3,730,000. In regard to this expenditure, the departments stood in much the same relation to the railways as private traders who apply for siding connections or warehouse or dock facilities. The details below show that the Great Western had a large expenditure under this head :—

	£
G.W.R.	1,966,000
L.M.S.R.	377,000
L.N.E.R.	1,031,000
S.R.	356,000
Total	£3,730,000

CHAPTER 18

Railway Companies' Docks, Harbours, and Wharves

THE railway companies have invested capital to the amount of £72,000,000 in docks, harbours, and wharves, which are situated round the east, south, and west coasts, from Methil and Grangemouth, on the Firth of Forth, to Troon and Craigendoran, on the Clyde. Most of the dock undertakings, such as those mentioned, stand on river estuaries forming natural channels for shipping and commerce. Their importance can be gauged by the fact that in 1937 dock receipts totalled £7,469,300, and working expenditure, including maintenance, was £6,461,350, leaving a balance of £1,007,950 to give a return of rather less than 1½ per cent. on property investment. In addition, the companies earned a substantial revenue from the carriage of passengers and freight to and from their piers and docks. Indeed, the contributory value to rail of shipping traffic was often the principal inducement to spend money on dock facilities. Since amalgamation a great deal had been done to improve dock equipment, and a survey made some years before the war showed that about twice as much general cargo could be handled as was actually passing over the quays, so that when the Government took control in 1939, it had a large reserve of shipment capacity on which to fall back during the emergency.

Since its creation in 1919, the Ministry of Transport had been responsible for the general administration of docks and harbours, but the Board of Trade looked after matters relating to navigation, such as lighting and pilotage, just as it supervised shipping affairs. When war broke out, these functions were transferred from the Board of Trade to the new Ministry of Shipping, but in May, 1941, inland transport, docks, and shipping subjects were all brought within the scope of the duties of the new Ministry of War Transport. Inside the Ministry, powers relating to docks and harbours were concentrated in a division known as the Port & Transit Control, which also dealt with the turnround of shipping all over the world, and a thousand and one questions affecting that vital issue.

These changes in Government methods of administration had the great convenience of giving dockowners one supervisory authority from whom they received directions and fitted in well

with the executive machinery, which was set up in the principal regions covering groups of ports with common interests. The early moves towards local organisation were made by the Board of Trade. In July, 1936, the Board instructed each port authority to set up a Port Emergency Committee, including representatives of :—

(1) the port authority (to act as chairman) ;
(2) railways serving the port ;
(3) overseas shipping ;
(4) coastwise shipping ;
(5) road transport ; and
(6) traders using the port.

In March, 1937, the Board confirmed the establishment of the Port Executive Committees and also outlined a scheme for a regional grouping of ports. Further the Board intimated that the Ministry of Transport would provide a headquarters organisation—the Port & Transit Control, already mentioned—and would be responsible for the whole organisation in time of war. In September, 1938, the Ministry of Transport advised that a representative of Labour should be co-opted on each Port Emergency Committee, and in course of time the constitution of these committees was varied to meet the distinctive conditions in the various regions. For example, representatives of lighter owners and of the fishing and petroleum industries sat on the Hull Committee, while the Tees Conservancy Commission and private wharfowners on that river had spokesmen on the Middlesbrough Committee. In addition to the members, the Port Emergency Committees were empowered to co-opt other persons interested in special aspects of dock working. To quote the Hull arrangements again, meetings were regularly attended by officials of the Ministry of Supply concerned in the transport of iron, steel, and timber. The Ministry of Food also sent three of its officials to discuss the movement of food, grain, oils, and fats, while the presence of representatives of the National Dock Labour Corporation, and of the employers' and workpeople's sides of the Joint Port Working Committee, ensured that labour topics were examined from every point of view.

The Port Emergency Committees were designed to secure the efficient and rapid clearance of traffic through the ports. They were responsible for giving effect to the instructions of the Port & Transit Control, and were themselves empowered to issue directions for regulating, facilitating, and expediting traffic. They decided the priority to be given to particular cargoes or particular pieces of work, thus controlling the berthing and movement of ships, together with the use of tugs, lighters, and barges. They supervised the loading and unloading of ships, and the use of appliances.

The occupation and clearance of quays, sheds, warehouses, and storage space came under their jurisdiction, as well as the movement of vehicles within the dock areas. The Port Emergency Committees also determined the amount of labour necessary in each port, and settled its working conditions. They took a keen interest in improving their port equipment, and appointed sub-committees from time to time to consider separate subjects, such as stevedoring and staff canteens. Of special importance were the Port Transport Sub-Committees, set up at each port to deal in detail with the working arrangements, and labour supply, for ships in dock.

After some eighteen months' experience of the work of the Port Executive Committees, the Ministry of War Transport decided that more effective co-ordination between shipping, dock operating, and inland transport would be secured by appointing Regional Port Directors on the Clyde, Mersey, Bristol Channel, Humber, and the North-East Coast. Possibly the need for these appointments was greatest where the docks were owned by public trustees, boards, or corporations, as at Glasgow, Liverpool, and Bristol respectively. At all events, the public heard frequently about the intervention of the Port Directors on the Clyde and the Mersey, especially in dock labour disputes.

Elsewhere dock affairs were, as a rule, administered in comparative tranquillity, so that the Port Directors could devote their energies to furthering the Ministry's plans for improving the turn-round of shipping and keeping dock areas clear of accumulations of goods. As the direct representatives of the Ministry in their regions, the Port Directors were in a strong position for reconciling differences of opinion between members of the local committees and could lend useful support to proposals for additional dock facilities. Consequently, the railway companies had no reason to regret the change in organisation, and their local officers maintained friendly relations with all the Port Directors throughout their term of office.

Wartime Arrangements for Port Working

Under the convoy system, the Ships Distribution Section of the Ministry of War Transport was responsible for directing incoming deep-sea vessels to the ports most suitable for the discharge of their cargoes. This difficult task was performed in what was known as the Diversion Room, because the original idea was that meetings held there would settle the transfer of shipping from the east to the west coast. As the war went on, the Diversion Room became the centre of allocation for shipping generally. Ports

were grouped geographically and each group had a representative in the room, who was fully posted from day to day about the berthing position and the state of other accommodation at the docks. Government Departments interested in the cargoes sent liaison officers in strength and agents for inland transport were present, to watch that ships were sent, as far as practicable, to places within easy reach of the ultimate destinations of the goods they carried. Convoy sailing lists could thus be examined from many angles before ships were ordered forward, under Admiralty protection, to suitable ports with ready berths. Through these painstaking methods, the strain on shipping, dock working, and inland transport was eased to such an extent that the Diversion Room has been described by Sir Cyril Hurcomb as " one of the best devised pieces of executive machinery introduced into transport during the war." The Sea Transport Division of the Ministry performed the comparatively simple duty of allotting fully requisitioned outgoing deep-sea vessels to ports for loading cargo, and the Coastwise & Short Sea Trades Shipping Control regulated coastwise shipping, being guided by the requirements of the Coal Supplies Officers when coal was to be taken on board.

On the outbreak of war, the Admiralty brought the Naval Control Service into action at each port, placing a Flag Officer in command at important centres, such as Cardiff and Southampton. The Naval Control Service took complete charge of shipping movements and organised the convoy system. The Control also directed minesweeping operations, as well as providing booms, torpedo nets, and other marine defences for the dock entrances. Subsidiary to the Control was the Naval Examination Service, whose duties were to report the arrival of vessels off the coast and their subsequent movements, so that the port authority could dock them without delay and give them a prompt turnround. At some ports the Admiralty requisitioned accommodation for special purposes, but was careful to interfere as little as possible with dock property and the ordinary quay working. Where, as at Immingham, a naval base was established and became the headquarters of the Flag Officer (Humber), the scheme was developed in full consultation with the Portmaster and the Ministry of War Transport.

At each port, the War Office Director of Transport set up a Movement Control to deal with the inland transport of War Department goods. Similar arrangements were made by the R.A.F., and the United States Army and Naval authorities. Sometimes, the Military Movement Control acted for the other Services and it was responsible for the safe handling of explosives. The Sea

Transport Division of the Ministry of War Transport supervised the loading of outgoing operational ships, taking over from Movement Control after traffic was assembled at the quayside. The organisation may seem complicated, but, thanks to the close liaison preserved with the Port Emergency Committees by all the representatives of Government Departments, the arrangements worked effectively.

Special Wartime Precautions at Docks

For reasons of national security, the Government wished dock transactions to be kept secret. The War Office therefore declared the ports to be Protected Places under the Defence Regulations, and nominated the Chairmen of the Port Emergency Committees to be the persons-in-charge, with power to regulate admittance to the dock areas. Permits were issued to people having legitimate business within the dock boundaries, and, to make the checking of these passes easier, the number of entrances to the docks was reduced, and additional fencing was erected at some places. Police supervision was strengthened by enrolling temporary men and women, and by obtaining assistance when necessary from the Military Security Control. Altogether, these precautions against espionage caused a large amount of work to the railway companies' dock staff. Much time and labour were also spent on air raid precautions. As dock workers were dispersed over wide areas, a large number of air raid shelters and first-aid posts was needed. At Southampton Docks, 120 shelters were provided for over 8,000 people, and at Hull, where the docks stretch for seven miles along the north bank of the Humber, no fewer than 235 shelters were prepared to hold 11,000 people The Naval, Military, and R.A.F. authorities all took a hand in the installation of anti-aircraft guns, searchlight batteries, barrage balloons, and other defences against attack from the air.

The application of the blackout regulations to docks was a source of considerable trouble, and the cause of many accidents. The docks at Grimsby and Immingham had an unhappy record, as during the first five years of war 150 people fell into the water, and 41 of them were drowned, though great care had been taken to protect dangerous places. Speaking broadly, category "B" lighting was used for general movement and category "C" lighting for ships' working. As far as possible, ships were lighted from the shore, so that lights on board could be extinguished from the same control point as the dock lights. At Southampton, and at the South Wales Docks, improved lighting made night working easier,

and at the King George and Alexandra Docks, Hull, where one shift only was worked before the war, lights were installed to admit of a night shift being introduced in times of exceptional pressure.

Pre-war arrangements for extinguishing dock fires varied from port to port. In some cases, the railway company maintained a private fire brigade. In others, the dockowners relied mainly upon the resources of the public fire brigades. At Southampton, for example, fine service was rendered by the Southern Railway fire brigade during the air attacks of November and December, 1940. At Hull, on the other hand, a long-standing custom made the City Fire Brigade responsible for fighting dock fires, and early in 1940, the brigade manned four fire stations, equipped with powerful pumps, at the docks. In June, 1941, the Ministry of War Transport did something to bring arrangements up to a common standard by directing that at each large port there should be a whole-time Fire Prevention Officer and a qualified deputy. The Ministry ruled that the responsibility for fire prevention rested with the port authority, so far as the dock area was concerned, and on the shipowners in respect of their vessels in port. The responsibility for fire fighting both in the dock area, and on board ships in port, rested with the National Fire Service, which then began to adjust local arrangements in conjunction with the Port Executive Committees. Wisely the National Fire Service did not aim at rigid uniformity. At Southampton the Southern Railway Brigade was embodied in the National Fire Service, and the port was equipped with several fire float appliances, but the Great Western Railway established brigades at its docks in South Wales, and at Plymouth. Nearly 400 full-time firemen were employed and the Great Western Railway brigades co-operated fully with the National Fire Service, holding joint exercises from time to time. Again, at Hull, the National Fire Service provided additional craft for fire fighting, and formed a service for rendering assistance to ships in the Humber estuary. In April, 1944, when military operations at Hull Docks became important, the National Fire Service appointed a Port Fire Officer, who supervised fire prevention measures and took charge of fire fighting operations within the port. Until September, 1944, civilian fire watchers were posted nightly at dock premises, in accordance with schemes approved by the Minister of War Transport. These fire guards extinguished many incendiary bombs during air raids, and rendered useful service in other ways, but it was, at times, impossible to bring sufficient men on duty to afford adequate protection. One difficulty was the irregular nature of dock work, and it was a relief to the port authorities when civilian fireguards were withdrawn.

Removal of Goods from Ports.

During the summer of 1940, air attacks on ports became frequent and did considerable damage. From an early stage in the war, the general practice of dockowners was to forward traffic from the ports by rail, water, or road as speedily as possible, but in April, 1941, the Minister of Transport decided that an intensive effort should be made to keep transit sheds, warehouses, and other accommodation clear of foodstuffs and inflammable goods. Orders were issued for all large stocks of these articles held at docks to be dispersed to inland points for storage. A similar direction was given in regard to stocks of sawn wood and mining timber stored in the open. The east coast ports of Hull, Grimsby, and the Hartlepools were especially affected by this instruction, as extensive timber yards have been laid out there over a long term of years. Between May 9 and May 22, 1941, nearly 6,900 wagons of pitwood were despatched from Hull for storage at collieries and wayside stations. About three-quarters of the sawn wood was transferred inland by road or water, but 4,000 wagons of sawn wood and logs were moved by rail. At the Hartlepools, much larger quantities of 90,000 tons of pitwood and 35,000 tons of sawn timber had to be transported. This great dispersal went on continuously from May 19 to June 19, 1941, while the ordinary work of the port proceeded as usual. Some 300 train loads of pitwood, and 90 of sawn wood, were run direct to the teeming grounds, and the traffic could have been worked away in less time if the Timber Control Section of the Ministry of Supply had been able to arrange for faster loading.

The embargo on the storage of timber at ports remained in force until July, 1944, but through stress of circumstances the restrictions on general goods were relaxed earlier. Towards the end of 1941, South Wales ports were allowed to store specific quantities of foodstuffs in dock sheds for short periods. At Hull, the import of oilseeds was heavy during the war period, in spite of damage to local seed-crushing mills. When the Ministry of Food was building up a reserve of oilseeds, the shortage of storage accommodation throughout the country made it necessary to dump a large tonnage of palm kernels and castor seed on hard-bottom open sites in the vicinity of Hull, with tarpaulins used to protect the heaps against the weather.

As one means of clearing dock quays and transit sheds promptly, the Ministry of War Transport decided, in 1941, to establish a number of inland sorting depots near the larger ports where congestion might arise. One sorting depot was allocated to South Wales ports, and was erected at the village of St. Mellons, about four miles east of Cardiff. This depot was 85 acres in extent,

comprising four transit sheds with a floor space of 50,000 square feet each. Sidings for 1,275 wagons were provided, together with a large park for road vehicles. The depot was managed for the Ministry of War Transport by the Great Western Railway, as Port Authority. In 1943, imports to the amount of 77,000 tons passed through St. Mellons, and, in addition, the Admiralty had the exclusive use of one shed for four months. Much of the traffic handled at the depot was for the U.S.A. Forces; one interesting consignment consisting of cased American vehicles, which were eventually shipped to Russia.

Appendix 16 contains a copy of the Control of Traffic (Removal from Ports) Order, 1942, which gave the port authorities powers to deal with goods through the sorting depots. Under clause 2 of the order, the Great Western Railway charged a flat rate of 7s. 6d. a ton for rail conveyance from any of its South Wales docks to St. Mellons. It is worth recording that the railway companies made special arrangements to assist the Government in planning a depot at Kirkby, about six miles from Liverpool, which was used for handling traffic from the Mersey ports. Early in 1941, Mr. J. Taylor Thompson, Assistant Engineer, N.E. Area, L.N.E.R., was released from his ordinary duties to design the layout of the depot, in consultation with the Mersey Docks & Harbour Board and the Chief Engineer and Signal & Telegraph Engineer of the L.M.S.R. With the aid of a small railway engineering staff, the work was performed expeditiously and in a manner which gave complete satisfaction to the Ministry of War Transport and to the Mersey Docks & Harbour Board.

Reserve Stocks of Coal at Ports

In 1940 and 1941, many open sites at ports were used for stacking reserves of coal for the Ministry of Fuel & Power. Considerable tonnages were laid down at South Wales docks, Fleetwood, and Garston. Grimsby had 70,000 tons of opencast coal on the ground, and 87,000 tons were stacked at the Hartlepools, where sites were available for storing half a million tons, if the coal had been forthcoming. Large reserves of coal for the Admiralty were also held at Grimsby, Immingham, and Lowestoft. In preparation for the landing in Normandy in 1944, the Ministry of War Transport built up a stock of nearly 65,000 tons of coal at Southampton Docks, where about 22,000 tons were already held for the Mines Department. In the pre-war years, about 70,000 tons of coal were received by sea at these docks, but in 1942, the import rose to 447,000 tons, and additional berths were extensively used for the

discharge of coal cargoes. In the early months of the war, Welsh coal for public utilities in the London area, which previously had passed by sea to the Thames, was directed to rail, owing to the difficult coastwise shipping situation. The extra traffic put a heavy strain on the Great Western route through the Severn Tunnel, and the Southern Railway relieved the position by dealing with colliers at Southampton, whence the coal was carried by rail to London and places on the south coast. The emergency soon passed, and in 1943 the tonnage of coal landed at Southampton declined to 217,000 tons, and fell off further in 1944.

Coal Shipments

The extent to which the normal business of a particular railway port was affected by the war varied with its geographical situation, the nature of its staple trades, and its adaptability for Government purposes. In one respect however, all ports were alike : there was inevitably a decline in coal shipments to the Continent and overseas. The table below shows that the shipments of coal, coke, and patent fuel at South Wales ports decreased from 19½ million tons in 1938 to 5,788,000 tons in 1944, or by 70 per cent. :—

Coal Shipments at South Wales Ports

	1938 *Tons* *(Thousands)*	1943 *Tons* *(Thousands)*	1944 *Tons* *(Thousands)*
Cardiff	5,229	2,328	1,440
Newport	3,061	1,128	1,152
Barry	5,578	1,942	1,754
Penarth	402	490	412
Swansea	3,782	1,164	711
Port Talbot	1,510	816	319
Total	19,562	7,868	5,788

In 1938, Garston, the L.M.S.R. dock on the Mersey, shipped 1,116,000 tons of coal, but in 1943 discharged more coal from coast-wise carriers than it exported. The import was 212,000 tons, and the export 206,000 tons. At Ayr, the pre-war shipments of 1½ million tons a year declined to 945,000 in 1943, and Grangemouth, which used to ship over half a million tons a year, was able to export only 161,000 tons in the fourth complete war year. The total tonnage of coal, coke, and patent fuel dealt with through L.M.S.R. docks, both inward and outward, was 4,296,000 tons in

1938 and was still over 4 million tons in 1940, but declined to 2,299,000 tons in 1943, or by 46 per cent.

Shipments at the L.N.E.R. docks and staiths fell from the 1938 figure of 21,939,000 tons to 9,420,000 tons in 1943, but recovered slightly in 1944. Separate tonnages for the principal shipping places, are given in the table below :—

Coal Shipments at L.N.E.R. Docks and Staiths

	1938 *Tons (Thousands)*	1943 *Tons (Thousands)*	1944 *Tons (Thousands)*
Grimsby	1,031	293	393
Immingham	1,912	263	316
Hull	2,179	870	1,577
The Hartlepools	3,008	1,410	1,233
Dunston	3,988	2,011	1,756
Blyth	4,910	3,061	3,897
Burntisland	1,239	23	9
Methil	2,771	784	673
Silloth	11	425	166

The decrease in shipments from the Firth of Forth is noticeable. Only Methil, which became a main bunkering port for convoys, retained more than a fraction of its pre-war business. Many large vessels used the docks there for taking bunkers or water. Indeed, in 1941, the net register tonnage of vessels entering the port was slightly above the 1938 figure of 1,346,000, and many of these were larger than the average ship loading cargo coal in normal times. The increased shipments at the small port of Silloth, in Cumberland, consisted mainly of low grade fuel for Eire from the Northumberland and Durham coalfields.

Imports and Exports of General Merchandise

The accompanying tables show that extensive use was made of the South Wales docks for the import and export of general merchandise :—

South Wales Ports—Imports of General Merchandise

	1938 *Tons (Thousands)*	1943 *Tons (Thousands)*	1944 *Tons (Thousands)*
Cardiff	1,521	1,721	1,611
Newport	354	914	861
Barry	379	579	584
Penarth	48	18	12
Swansea	1,104	1,945	2,484
Port Talbot	503	90	139
Total	3,909	5,267	5,691
Percentage increase over 1938		35 per cent.	45 per cent.

South Wales Ports—Exports of General Merchandise

	1938 Tons (Thousands)	1943 Tons (Thousands)	1944 Tons (Thousands)
Cardiff	113	525	744
Newport	169	446	652
Barry	141	364	544
Penarth	6	39	117
Swansea	625	630	1,482
Port Talbot	3	65	211
Total	1,057	2,069	3,750
Percentage increase over 1938 ..		96 per cent.	255 per cent.

Immediately after the outbreak of war, the imports of iron and steel, including scrap metal, at South Wales docks increased considerably, but less iron ore was received. The volume of oil discharged grew larger, while there was a sharp decline in the landings of pitwood and mining timber. By 1941 heavy cargoes of lease-lend goods from America were arriving; and tanks, aeroplanes, and other war materials had to be handled. For the first time in its history, Swansea had to deal with imported frozen meat, and, not only were unusual cargoes being discharged, but the work often had to be done at high pressure owing to the irregular arrival of convoys. In 1943 a feature of the import trade was the unloading of unwieldy articles, such as locomotives, tanks, armoured cars, and floating craft for the U.S.A. Forces. Lifting appliances were busily employed; a 100-ton floating crane and seven floating derrick cranes of 50 to 60 tons capacity proved of the highest value. In order to give shipping a prompt turnround, the force of dock transport workers was supplemented by some hundreds of U.S.A. soldiers at each of the principal ports.

Exports from South Wales ports consisted largely of munitions and Government stores. The tonnage shipped fluctuated with the changes in the war situation, and goods were frequently diverted from other ports at short notice. The outward traffic thus consisted of a greater variety of goods than ordinarily passed through the South Wales docks, but the Chief Docks Manager and his staff met unusual demands with vigour and resource. The servicing of American "sea train" vessels may be mentioned as an instance of a new class of business which was tackled successfully. These vessels are constructed with engines aft, and have three decks, each of which is divided into four sections. A standard-gauge rail track is laid throughout the length of each section, with its surface level with the deck, so that rail and road vehicles can be carried with equal ease. A well, slightly forward of amidships, gives access for loading and discharging, the cargo being moved along the tracks to and from the well, which is covered by removable

bridging pieces at each deck level. The whole of the freight must be lifted into or out of the ship. Locomotives and rolling stock cannot be run on board, as in the case of a train ferry, and so the vessels are equipped with derricks capable of handling 120-ton weights. In October, 1943, the ss. *Lakehurst* arrived at Newport with 166 tanks, and 16 other vehicles, weighing 4,285 tons. In December, she returned to Cardiff with a cargo of 3,100 tons, including 34 locomotives. In the same month, the ss. *Texas* landed at Newport a similar, but larger cargo of 3,765 tons. Both vessels made subsequent trips across the Atlantic, and, when France was invaded, they were loaded at the South Wales docks with rolling stock and tanks for use in Normandy. Useful work was also done at Millbay Docks, Plymouth, where the aggregate of imports and exports of general freight for 1943 was 250,000 tons, largely composed of lease-lend goods, and stores for the U.S.A. Forces. The net register tonnage of vessels entering Plymouth in 1943 was 636,000, more than twice the figure for 1938.

With the exception of Grangemouth, the important ports of the L.M.S.R. are all on the west coast, and several of them are principally engaged in trade with Ireland. There was a variation of only 8 per cent. in the tonnage of general freight traffic passed through the whole of the docks in 1938 and in 1943. The total imports and exports declined from 4,675,000 tons before the war to 4,269,000 tons, but the nature of the dock business changed in a marked degree. Barrow-in-Furness continued to import iron ore, but also received cargoes of sawn timber, and shipped military stores and vehicles. Fleetwood will be mentioned later, along with other fishing ports. Garston ceased to import timber and bananas, and turned its storage grounds into a sorting depot for Royal Engineers' stores, through which about 500,000 tons of material passed. Heysham remained a passenger and goods cross-Channel port, but dealt with oil for an aviation fuel reserve depot and refinery, erected near the harbour. The peak year of its trade was 1942, when imports and exports totalled 685,000 tons, as compared with 261,000 tons in 1938. In addition to its normal cross-Channel traffic, Holyhead handled explosives, which had formed part cargoes of overseas vessels. Ayr was busy in the years from 1941 to 1943, largely with Government traffic; and Stranraer, which handled 47,700 tons of traffic in 1938, imported 94,700 tons in 1942, and exported nearly 64,000. This improvement of nearly 230 per cent. in turnover was due to the presence of large bodies of troops in Northern Ireland, and to the brisk state of trade in Belfast. On the east coast, Grangemouth lost the imports of timber, on which it depended in peace time, but was used freely for the export

of Government traffic as the war developed. A total tonnage of 1,675,000, inward and outward, in 1943 represented a 20 per cent. decrease on the 1938 turnover of 2,099,000 tons.

The impact of the war upon ports served by the L.N.E.R. was especially severe. The company is the largest dock-owner on the east coast, north of the River Thames. From Harwich to Methil, its docks and quays formed a natural gateway for the exchange of commodities with many European countries, and large ocean-going cargo vessels also came regularly to Hull, Immingham, Middlesbrough, and the Hartlepools. In 1938, the net register tonnage of shipping entering the L.N.E.R. docks was 20,165,000. In 1943 the volume of shipping had fallen by over 50 per cent. to 9,435,000 net register tonnage. These figures exclude Harwich and Parkeston Quay, which were taken over by the Admiralty on the outbreak of war, and closed to commercial shipping. In peace time, the imports of general freight at L.N.E.R. docks were about six times as large as the exports, and consisted mainly of timber, grain, oilseeds, fruit and vegetables, provisions, and mineral oil. At Hull, about a million tons of timber were discharged annually, and large quantities were also landed at Grimsby, Immingham, and the Hartlepools. The war reduced this valuable trade to insignificant dimensions. In a normal year, Hull imported 1¼ million tons of grain, but in 1941 received only 750,000 tons, and about half of that amount in subsequent years. The import of oilseeds was maintained fairly well; but fruit, vegetables, and provisions almost ceased to pass. An annual import of 750,000 tons of mineral oil dropped to 90,000 tons in 1943. On the other hand, from 300,000 to 400,000 tons of iron and steel were landed at Hull during each war year—about three times the pre-war quantity. The appended tables give details of the imports and exports at the various docks for the years 1938, 1943, and 1944. Both inward and outward, war materials, munitions, and Government stores to a large extent, took the place of the ordinary merchandise of commerce after September, 1939, and were more difficult to handle.

L.N.E.R. Ports—Imports of General Merchandise

	1938 *Tons (Thousands)*	1943 *Tons (Thousands)*	1944 *Tons (Thousands)*
Grimsby	644	187	101
Immingham	529	461	696
Lowestoft	118	2	8
Hull	6,379	2,308	3,053
Middlesbrough	67	149	227
The Hartlepools	528	159	173
Ports in Scottish Area	494	214	143
Total	8,759	3,480	4,401
Per cent. decrease on 1938		60 per cent.	50 per cent.

L.N.E.R. Ports—Exports of General Merchandise

	1938 Tons (Thousands)	1943 Tons (Thousands)	1944 Tons (Thousands)
Grimsby	54	9	203
Immingham	245	67	96
Lowestoft	35	—	4
Hull	778	536	599
Middlesbrough	324	220	305
The Hartlepools	12	15	58
Ports in Scottish Area	42	71	39
Total	1,490	918	1,304
Per cent. decrease on 1938		38 per cent.	12 per cent.

Before the war, Hull and Grimsby were the two principal seats of our fishing industry. In 1937 the landings of white fish at Hull were about 41 per cent. of the total for Great Britain, and the port claimed to have the best equipped trawler fleet in the world. Grimsby also had an efficient fleet of 430 trawlers. The Admiralty requisitioned the bulk of both fleets, and the trawler owners were left to carry on with a small number of the older types of boats. Owing to the comparative immunity of Fleetwood from air attack, some Hull and Grimsby boats were transferred to the west coast port. At one time, the Hull fishing industry almost came to a standstill, but in 1943, landings were 62,000 tons, rather more than a fifth of the pre-war average figure. The Grimsby landings for the same year were 54,500 tons, compared with an average tonnage of 200,000 in peace-time. At Fleetwood, the landings during 1943 amounted to nearly 136,000 tons, compared with an average tonnage of 66,000 for the four years before the war. The Ministry of Food and the Ministry of Agriculture & Fisheries jointly endeavoured to help the fish trade through a trying time. The Ministry of Food successfully inaugurated a scheme for the conveyance of Icelandic fish by carriers, and in October, 1942, a distribution scheme assigned definite zones to the four main fishing ports—Hull, Grimsby, Aberdeen, and Fleetwood. Price control was established at the same time and the Ministry of Food paid carriage charges to the railway companies at a flat rate of £5 10s. a ton.

The docks of the Southern Railway differ radically from those of the three " heavy " companies which we have described. Just as the Southern has always been predominantly a passenger-carrying line, so Southampton, Newhaven, and Folkestone were occupied mainly with overseas and Continental travel. Before the war, Southampton dealt with 44 per cent. of our total overseas passenger business. The largest liners afloat sailed from the port, through which nearly 650,000 passengers, inward and outward bound,

passed in 1938. The volume of shipping handled was 10,388,000 net register tonnage—a total exceeded only by London and Liverpool among British ports. In contrast, the tonnage of freight passed over the quays was no more than 1,084,000. Of the 700,000 tons imported, the principal items were 196,000 tons of fruit, and 150,000 tons of grain. The exports of 384,000 tons comprised manufactured products, and goods in transit from the Continent. A large proportion of the tonnage thus consisted of valuable commodities, and Southampton ranked as one of the six leading ports of the United Kingdom, when the value of imports and exports was taken as the criterion. In the early months of the war, Southampton became an important place of embarkation for military traffic, but, owing to its situation on the Channel, it was closed to overseas shipping after the surrender of France in June, 1940, and its activities were restricted to coastal sailings and ship-repairing. The port was re-opened to overseas traffic in February, 1942, dealing with 703,000 tons of general freight in that year, and with 597,000 tons in 1943. The bulk of these goods consisted of lease-lend consignments from the U.S.A. and Canada, including provisions, metal, and large quantities of timber.

In 1944 Southampton took a leading part in the programme for D-Day, June 6, and in the later plans for the invasion of Normandy. In the seven months from June to December, 1,515,000 tons of stores and equipment for the Allied Forces were shipped—nearly 50 per cent. more than the combined import and export tonnage for a whole pre-war year. Train ferry services were run to Cherbourg, as soon as the French port was open, and carried complete hospital trains, locomotives, and wagons. When the Allied armies advanced into North-West Europe, its situation naturally made Southampton a terminal for leave ships.

At this stage, it will be appropriate to mention the use which was made of railway docks at Barrow-in-Furness, Hull, and Southampton in constructing the "Mulberry" port of Arromanches on the French coast. Much of the experimental work was carried out by Government contractors at Barrow, where sample pontoons and pier spans were assembled in the Devonshire Dock. At a later date, No. 2 graving dock at King George Dock, Hull, was allotted to the Government for the building of concrete units, and many of the concrete caissons for the prefabricated port were erected at Southampton, where the dry docks were used for the early constructional work, and the upper portions were completed at wet berths. Other component parts of "Mulberry," such as floating breakwaters and pierheads, were also assembled at Southampton. Altogether, June, 1944, was a memorable time

in the history of the port, the docks being crowded with operational shipping and hundreds of craft for amphibious warfare. Southampton was used as the spring board for the main assault, and the new docks, constructed by the Southern Railway between the wars, proved of great value. But for the existence of these facilities, the invasion might have been planned on different lines.

In 1938, Newhaven handled 383,000 passengers, and 84,000 tons of freight, most of which traffic was carried by the Dieppe steamship service. That service ran until May, 1940, and the port also acted as a base for hospital ships ; 20,000 casualties were landed up to the withdrawal from Dunkirk. The port was then closed until June, 1941, when it began to deal with Government traffic. The first of the Southern Railway cross-Channel services to be resumed was opened between Newhaven and Dieppe on January 15, 1945, and was soon running daily.

Folkestone depended for trade upon the cross-Channel services of the Southern Railway, which carried nearly 548,000 passengers in 1938, and about 37,000 tons of freight. When these services ceased in 1940, the port became a purely Naval base. At the beginning of 1945, it was selected as one of the terminals for ships conveying troops on leave between the Continent and this country.

Provision of Additional Dock Facilities

The railway companies might not have been successful in keeping their docks free from congestion if the Government had not assisted them to provide additional facilities on a liberal scale. These facilities were concerned with rail, road, and water traffic. They were needed at South Wales ports on a more extensive scale than elsewhere. At Cardiff, a new group of sidings was constructed to hold 1,500 wagons, and some extra sidings were laid down at Newport, Barry, and Swansea. Roadways were also built at a number of places to give road vehicles direct access to quays which previously had been served by railway lines. In 1940, the cranage power at the South Wales docks was strengthened by the erection of 52 new appliances, most of which were 3-ton electric cranes. Two years later, 10 more 6-ton electric cranes were installed at Swansea, and 4 at Barry. In the meantine, the number of heavy lifts had outgrown the capacity of the Great Western's 100-ton floating crane, and of the fixed cranes on the quays. The Chief Dock Manager prepared a design for a floating derrick crane of 50 tons capacity, mounted on two dumb barges, combined with a floating pontoon. The Minister of War Transport authorised the

construction of 7 of these improvised machines, and, though they had to be moved from point to point, they worked efficiently and were in constant employment. The Ministry gave further help by lending two 60-ton self-propelled cranes for temporary use at Cardiff and Swansea, while late in 1943 the American Forces brought over a number of 30-ton floating cranes, which did good service at Cardiff, Newport, and Swansea, until they were required for work at Continental ports. Mobile land cranes were provided freely to facilitate quay and shed working, and many mechanical devices were introduced for the same purpose. Three floating grain elevators were sent by the Ministry of War Transport for the discharge of grain to barges, which were useful for speeding up the clearance of steamships, and this summary of additional equipment may be rounded off by saying that every opportunity was taken to strengthen the tugboat service. The Great Western Railway put a new tug into Cardiff Docks in August, 1940, and secured the loan of another boat from the L.N.E.R. in December, 1942. The Ministry of War Transport arranged other accessions to the fleet from time to time. Of particular interest was the unloading by the 100-ton floating crane at Cardiff, in August, 1944, of two "Tanac" tugs. Built in Canada, these boats were 60 ft. in length, weighed 82 tons, and were driven by diesel engines. They were used for towing barges and floating cranes, but on one occasion, in fine weather, two of them handled a vessel of over 4,000 net register tonnage.

Many Government works were carried out at the South Wales ports in order to take advantage of their transport facilities. One of the largest cold stores in the United Kingdom was built at King's Wharf, Queen Alexandra Dock, Cardiff. The east side of No. 3 Dock, Barry, was equipped as an oil discharging berth, a pipeline carrying the oil through the dock area to storage tanks outside. Another berth for handling petroleum products was fitted up at Port Talbot, and connected by large pipelines with the National Oil Refineries Works at Skewen. Phœnix Wharf No. 1, between King's and Queen's Docks, Swansea, was equipped with crane track and railway lines for War Department purposes, and the War Office likewise decided to equip the north side of Penarth Dock for dealing with general cargoes. This dock had been out of commission since 1936, but, re-equipped with spare cranes and capstans, which the War Office hired from the L.N.E.R., was brought into service again in December, 1940.

While all these works were being carried out, considerable damage was done to the South Wales docks during the air-raids of 1940, 1941, and 1943. Transit sheds, constructed by the Great Western Railway at Cardiff, Barry, and Swansea, in part replaced

accommodation damaged by enemy action, but, though some of the air attacks were severe, the dock working was interrupted in a surprisingly small degree.

With the exception of Barrow and Garston, air raids did little damage to the larger docks of the L.M.S.R., but Poplar Dock, on the Thames, was put out of use from December, 1940, until May, 1943, and a small wharf at Renfrew, near Glasgow, was demolished in March, 1941. At Barrow, the hydraulic power system was damaged two or three times in May, 1941, and dock sheds were destroyed. Normal working was soon restored, and improved by the installation of two 10-ton electric cranes at the Anchor Line basin, and by the raising of part of the quay wall there to suit the loading of train ferries. At Fleetwood, improved facilities were provided for fish traffic, and at Heysham the Government built a jetty near the Harbour entrance, where ocean-going tankers were moored. Their cargoes were either discharged through pipelines to a fuel reserve depot or transferred to coasting vessels at a specially equipped berth within the harbour. Gourock Pier, on the Clyde, which catered in peace time for passengers travelling down the firth, was partly made over to the Admiralty for the berthing of destroyers, and partly to the Ministry of Transport for the off-loading of barges. In 1940, the Ministry set up an organisation known as Clyde Anchorage Emergency Port to deal with the unloading of ocean-going vessels which could not reach a quay. These vessels discharged cargo overside into barges, which were taken to various landing places on the river. Gourock Pier furnished 400 ft. of berthing space, and was strengthened to deal with goods traffic and equipped with electrical apparatus. The Craigendoran Pier of the L.N.E.R., on the north bank of the Clyde, was adapted for the same purpose, about 173,000 tons of traffic, and 223,000 mail bags, being handled there.

The situation of the L.N.E.R. docks, directly opposite the Continent, made them the natural sites for Admiralty work. Lowestoft, with its fish markets, was converted into a naval base. The Admiralty constructed two slide slipways for the repair of Coastal Forces craft, and a draw footbridge 280 ft. long was built across the harbour as an alternative crossing to the Lowestoft swing bridge. At Grimsby No. 1 Graving Dock, the Admiralty provided a 7-ton steam crane and three diesel mobile cranes of 5 to 6 tons capacity were supplied by the Ministry of War Transport. Crane tracks on the west quay of the Royal Dock were also adjusted to suit the loading of operational ships. At Immingham, a roadway was constructed at the Mineral Quay and used for the road transport of cases unloaded at the 50-ton crane. A single-storey

transit shed, 500 ft. long by 90 ft. wide, was also erected on the Mineral Quay to deal with wartime cargoes. Most of the material for the shed was obtained by dismantling other buildings in the dock area. Between August, 1940, and July, 1943, five serious air attacks were made on Grimsby and Immingham. In the last two raids, extensive damage was done to the Grimsby fish markets and docks, but the port was kept open.

As was the case in the last war, Hull City and Docks constituted a highly vulnerable area. On at least 20 occasions, the docks suffered damage of some consequence. Air raids began on July 1, 1940, when an oil tank at Salt End was set on fire, and went on until July 14, 1943, when buildings and appliances at Alexandra and King George Docks were damaged extensively. The worst attack came on the nights of May 7 and 8, 1941. At the Western Docks, the Riverside Quay was wholly destroyed by fire ; 10 warehouses were either demolished or badly damaged, and much valuable equipment was destroyed. At Victoria Dock, 2 warehouses and 5 sheds were demolished or gutted by fire. The greater part of the L.N.E.R. dock engineering workshops and stores, which adjoin Victoria Dock, was destroyed by fire, together with a large amount of materials, machine tools, plant, and equipment. Consequently, the Chief Engineer for Docks was handicapped in carrying out essential repairs, but, despite all the damage to buildings and appliances, not a single dock was at any time put out of commission. At the Alexandra Dock, the Agent's Office, and many other buildings were destroyed, including 2 warehouses and 5 sheds. Three coal hoists were put out of use, and rail access to the dock was completely cut off for a time. Extensive damage was also done at the King George Dock ; about 800 wagons were destroyed at the two large eastern docks. It was remarkable that dock operations were never entirely suspended at these eastern docks, though ships berthed in them were delayed for three or four days.

In view of the wholesale diversion of traffic from the River Humber to west coast ports, no major works were undertaken at Hull Docks. Indeed, in 1940, ten 3-ton electric cranes were transferred from Alexandra Dock to Penarth. Some adjustments of crane power were made within the dock area, extra grabs were provided for the discharge of bauxite, and the Ministry of War Transport lent four steam driven portable elevators for handling linseed and grain. The Ministry encouraged the practice of discharging cargo overside to lighters by augmenting the local fleet of 400 craft, which had been formed into a pool. Forty concrete barges were built locally on Government account, and four large lighters, with a capacity of 325 tons on a mean draft of 8 ft. 3 in.,

were sent round to Hull. The use of these craft helped to improve the discharge of ships, but sometimes involved the transhipment of their loads to railway wagons or road vehicles. Mobile steam cranes were also provided to deal with iron and steel imports for the Ministry of Supply, which set up stockyards at Alexandra and King George Docks. At the end of 1943 several of the damaged warehouses were put into serviceable condition for the storage of food, but it would have been neither politic nor practicable to repair much of the air raid damage to structures such as the Riverside Quay. A comprehensive scheme for restoring Hull Docks will, no doubt, be prepared as part of the plans for post-war reconstruction.

Middlesbrough Dock was without direct road access before the war, all traffic being worked to and from the quays in railway wagons. Wishing to carry some of its traffic by road, the War Office spent £9,250 on the construction of a roadway to serve two of the quays. A transit shed, which had been destroyed by fire in 1926, was also replaced at the request of the Ministry of War Transport for the assembly of packages for shipment. By using second-hand material, the cost of the shed was kept down to £11,000, and 85 per cent. of that amount was refunded by the Government under section 41(2) of the Civil Defence Act. The Admiralty established a base for the examination of vessels at Victoria Dock, Hartlepool, where a quay 700 ft. in length was available, and the War Office used two large areas of timber storage ground in the dock area for a Royal Ordnance tank track storage depot, which has handled over 100,000 tons of tank tracks. Accommodation on a large scale was found at the Hartlepools for the Ministries of Food and Supply, but it was not necessary to carry out any new work of importance at these sites.

We have already seen that conditions at Southampton changed abruptly more than once during the war. In 1940, the Southern Railway was able to spare dock equipment which was in demand elsewhere. At other times, steps had to be taken to improve the facilities within the docks. An interesting event was the purchase by the Admiralty of the 60,000-ton floating dock, which was used in peace time for the drydocking of passenger liners. The dock is the largest of its kind in the world, but had to be strengthened and stiffened by John I. Thornycroft & Company, to fit it for the repair of warships, before being towed to Portsmouth. In November, 1941, another fine dock appliance, the 150-ton floating crane, was transferred to Glasgow. Twenty electric cranes of ordinary types had previously been sent to the Clyde for War Department purposes

and a dozen electric trucks of 2 tons capacity were moved temporarily to each of four West Coast ports—Bristol, Cardiff, Liverpool, and Glasgow. Some of this equipment was recalled after Southampton was reopened for general traffic in February, 1942, and lease-lend shipments began to arrive. The cranage power was strengthened by the addition of two powerful steam floating cranes and 25 new electric cranes, varying in capacity from 2 to 10 tons. Two 6-ton electric cranes were also installed at the dry docks to speed up ship repairs, and two new fitting berths were provided in the wet docks. Nearly 7 miles of additional sidings were laid down in the dock area, and a new connection was made with the Southern Railway main line for the working of traffic to and from the west.

The adaptation of the port to war requirements threw a great deal of work on the Docks Engineer, who had been busily engaged since August, 1940, in repairing bomb damage to quays, buildings, appliances, and dock railway lines. The first intense air raid on the 13th of that month destroyed the International Cold Storage Company's premises on the quayside, and subsequent attacks did extensive damage to buildings in the docks occupied by other private firms. In September, 1940, " D " warehouse was bombed, but railway property escaped serious injury until November 23, 1940, when a night attack damaged the South Western Hotel, the Docks Central Fire Station, two or three shipping berths, and several buildings. A week later, worse attacks were made on two successive nights—November 30 and December 1. Many high explosive and incendiary bombs were dropped, and four warehouses and eleven sheds were destroyed. Much damage was done to other buildings and rolling stock, while gas, water, and electricity supplies were interrupted. Sporadic raids continued until July, 1941, but were comparatively ineffective, and it was remarkable that throughout the whole period of the raids only two members of the Docks Department staff lost their lives while on duty. During the 1940/41 raids surprisingly little harm happened to Newhaven, but in March, 1942, the East Pier was badly damaged, the railway offices were totally destroyed, and two members of the staff were killed. At Folkestone, and at the Southern Railway wharves on the Thames, some reconstruction will be necessary.

Dock Labour

At all ports in the country, the time rates of pay for transport workers were raised from 13s. to 16s. a day by three awards of 1s. each, agreed with rhe National General Council for Dock

Labour on October 30, 1939; June 27, 1940; and February 28, 1944. In addition, the men became entitled to attendance money when they registered for employment, but were not engaged for work, under a national agreement of July, 1941. Less importance attached to these changes in remuneration than to the steps which were taken to organise dock labour. The pre-war practice was for each employer to engage transport workers as he required their services, but in July, 1940, new arrangements were introduced. The Minister of Labour & National Service appointed Port Labour Inspectors with the power to direct dock labour to particular work. If an employer failed to obtain the workers he required at the usual booking-on point, he asked the Port Labour Inspector to fill the vacancies. The Port Labour Inspectors were even empowered to direct unemployed transport workers to other ports where work was available.

The next change in the conditions of transport workers was the establishment of the National Dock Labour Corporation Limited, in accordance with the Essential Work (Dock Labour) Order, 1941. The Corporation had no share capital, and was managed by a board of directors nominated by the National Joint Council for Dock Labour. All the principal ports came within its scope, except those on the Mersey and the Clyde, and at each port a dock labour scheme was operated by a local board on which employers and the dockers' trade unions were represented. Both the employers and the transport workers registered with the Corporation. Labour could be engaged only through that body, which became responsible for paying wages, and for directing dockers to work suited to their individual capacities. In order to put the Corporation in funds, employers contributed a surcharge on the amount of wages paid, which varied from time to time, in accordance with the circumstances at each port. Inevitably, the cost of dock labourage was increased substantially, and dockowners had no alternative but to recoup themselves by advancing their charges to the public. Piecework rates were fixed, so that the men had a chance of earning half as much again as time rates would have given them, and the extra efforts put forth undoubtedly helped to expedite the turnround of ships.

These plans for organising dock labour not only kept the ports fluid, but had distinct social advantages. They practically abolished the casual element that had always been a characteristic of employment at docks, by guaranteeing the men either work or attendance money. There are good prospects that the change from the old uncertain state of affairs will lead to a permanent uplift in the status of transport workers. Another improvement in their

working conditions was brought about by the issue of the Docks (Provision of Canteens) Order, dated February 10, 1941. At nearly all docks there existed in peace-time refreshment rooms managed by private caterers, who rented premises from the railway companies. These facilities were inadequate during the stress of war, and the Order empowered Factory Inspectors to certify that additional canteens were necessary at any place which they had examined. Accordingly, either existing premises were extended, or new buildings were erected, at most of the railway-owned docks. The Ministry of Transport agreed to meet the expenditure incurred on permanent canteens and equipment, by no means a trifling commitment, and encouraged the railway companies to proceed on fairly generous lines in providing for the comfort of the transport workers, as well as of railwaymen employed at the docks. Most of the new canteens were run by catering contractors, but the Port Emergency Committee kept a close watch on the arrangements, and were at pains to ensure that meals could be obtained by the men during overtime hours, as well as on day shifts.

Reference has been made previously to the use of military assistance at South Wales ports in times of pressure. There was an understanding, applicable to all docks, that troops would be called in only if the employers and trade unions agreed that the shortage of civilian labour was such that military labour was necessary for the furtherance of the war effort, and the soldiers were allocated to military cargoes, as far as possible. Employers paid for military labour at civilian rates, and it was stipulated that the troops should be trained in transport work. Under these arrangements, contingents of the British Pioneer Corps worked at Hull and Southampton in 1943. Later in that year, dock operating companies of the Royal Engineers gained experience at Southampton, and were followed by troops of the U.S. Port Transportation Corps in February, 1944. From that time onwards, troops from both armies were freely drafted to various docks to meet emergencies, and performed quayside and stevedore work, crane driving, and cargo checking duties. This scheme for supplementing civilian labour was of mutual benefit to the dockowners and the Army Authorities.

Dock Rates and Charges

With a view to meeting the increased costs of dock operations, apart from labourage on goods, dock rates and charges were advanced by 20 per cent. on November 1, 1940. Authority for this increase in statutory charges, such as dock dues on vessels, and wharfage on goods, was given by the Railway-owned Harbours,

Docks & Piers (Increase of Charges) Order, 1940. In the case of coasting liners, carrying mixed cargoes, and operating on regular scheduled services, the increase was limited to 7½ per cent. After 1940, the cost of operating and maintaining docks continued to rise, but the Government, following the policy applied to railway rates and fares, did not approve a further increase in dues at railway-owned docks, though at certain docks, managed by public boards, dues had been advanced by higher percentages—in at least one case by 100 per cent.

A General Survey

In this account of wartime happenings at railway-owned docks, superlatives have been purposely avoided. The actual statements suffice to show what an important part of our transport machinery these undertakings formed. Our own Government, and the Governments of our Allies, fully appreciated the essential nature of their functions as a link between land and sea transport. A long succession of distinguished visitors came to one or other of the ports to gain an idea of the work which was going on, and went away satisfied that commodities of all kinds were being shipped and unshipped with good despatch. Dock working is at any time a fascinating study, liable, as it is, to be interrupted by the effects of the winds and the tides on the movement of shipping and carried on subject to " the custom of the port ". While the war stopped many staple trades, the dock staff were put on their mettle to devise means of dealing with strange shipments. In October, 1942, a submarine cable, in one length of 72 miles, was brought to Newport Docks on ten tube wagons, and stowed on board the ss. *Guido* in one coil. Over the hatchway of the ship's hold was suspended a contrivance through which the cable was drawn by the pressure of soft rubber wheels actuated by a connection from the ship's winch. Again, one does not associate Barry Docks with the import of lumber in logs up to 120 ft. in length, but early in 1944 the Canadian Forestry Corps was constructing rafts in the dock and on launching slips ashore. The rafts, containing about 250 logs apiece, and weighing as much as 300 tons, were floated out from Barry Docks, and taken across the Channel for use by the U.S. Army Engineers.

These are but two examples of many exceptional tasks performed in railway docks, and, apart from the transfer of goods over the quays, or by water, the dock facilities assisted many firms located on adjoining sites to engage energetically in war production. Many Admiralty orders were fulfilled in the shipbuilding yards of Vickers Armstrongs Limited, Barrow, and in the first five years

of the war Wm. Gray & Co., Ltd., launched 74 vessels, with a total net register tonnage of 220,000, into the Hartlepool Docks. In the same period, the latter firm repaired over 1,600 vessels, and, indeed, the ship-repairing industry worked at full pressure at all the principal ports. More than 10,000 vessels of all types and sizes, including a large number of operational craft, were repaired or refitted at Southampton. This work continued throughout the war period at the dockyard bases of Harland & Wolff Limited, John I. Thornycroft & Company, and the Southern Railway. The railway-owned graving docks were nearly always occupied, and large numbers of ships were fitted with defensive armament and apparatus, such as paravanes, torpedo-nets, and mine-detecting devices. There was, in short, a great volume of work done in and around the docks, which is not reflected in the traffic statistics. In co-operation with the Admiralty and the Ministry of War Transport, the railway companies succeeded in making their docks, harbours, and piers into an asset of great value to the Allied nations during the emergency.

CHAPTER 19

Railway-Owned Steamships

THE railway companies have always taken a great pride in their steamship fleets, which in peace-time sailed, in connection with express train services, to and from the Continent, the Channel Islands, Eire, and Northern Ireland, as well as in Scottish waters. At the outbreak of war, the four Groups owned 130 vessels with an aggregate gross tonnage of 176,000. These ships, together with the marine shops and plant, represented a capital expenditure of £9,400,000, and during the years 1923 to 1938 the companies spent about £7,000,000 on the development of their steamship services. Their net steamship earnings were over £1,600,000 in 1938, and it has to be remembered that the bulk of the steamship traffic also contributed to railway passenger and goods revenue. The companies had hoped that 1939 would be a prosperous year and the declaration of war was a blow to their Continental and Marine departments. Sooner or later, all the sailing schedules were upset to a serious degree. Many vessels were requisitioned immediately for Government service and 92 ships in all were chartered by the authorities at various stages of the war. It is proposed to explain briefly what happened to each of the steamship routes, beginning with the L.N.E.R. because Harwich, its principal gateway to the Continent, was closed for passenger travel on September 3, 1939, and later was taken over entirely by the Admiralty.

L.N.E.R. Fleet

From Parkeston Quay, Harwich, three modern ships—*Amsterdam, Prague,* and *Vienna*—each of 4,220 gross tons, ran a nightly mail, passenger and cargo service to the Hook of Holland. Three older ships of 3,000 tons each—*Antwerp, Bruges,* and *Malines*—were engaged on the Antwerp mail route, while a seasonal passenger service to Zeebrugge was maintained by two smaller turbine vessels, the *Archangel* and *St. Denis.* A regular freight service was worked from the Quay to Rotterdam by the *Sheringham* and *Felixstowe,* and from a terminal at Harwich three train ferries, which were employed at Richborough in the last war, carried

through Continental wagons to Zeebrugge. By the end of January, 1940, all the passenger steamers, except *Malines* and *St. Denis*, were being used as military transports, based on Southampton. In April, 1940, the two spare vessels were sent to Rotterdam to bring home British subjects from the Netherlands. On the night of May 11, *Malines* made a somewhat risky voyage back to this country, but two days later *St. Denis* was scuttled at her Rotterdam berth on orders from the naval control, her crew escaping through the Hook. *Malines* next proceeded to Southampton to join the troop carriers.

In the meantime useful work was done by the freight steamships. The train ferries plied between the terminals at Harwich and Calais from September, 1939, to May, 1940, carrying four ambulance trains, railway wagons, guns, heavy road vehicles, and military stores on War Office account. Cargo services, which had ceased at the end of August, 1939, were resumed in December between Ipswich and Rotterdam, Antwerp, and Zeebrugge. Two chartered Dutch vessels were used, as well as the steamers *Sheringham* and *Felixstowe*, and brought over large quantities of foodstuffs and general traffic. Horses, motorcars, and machinery were shipped outwards to Holland and Belgium. The invasion of the Low Countries on May 11, 1940, brought the enterprise to a close. *Felixstowe* was requisitioned, and the three train ferries went round to Southampton, while *Sheringham* was lent to the G.W.R. for the Channel Islands trade.

The whole of the Harwich steamships, engaged on Government service, played some part in evacuating troops from France after her surrender. *Prague* made three successive trips to Dunkirk between May 28 and June 1, 1940. On her last homeward voyage, the ship was badly damaged in an air attack, but, by skilful seamanship, was beached at Deal and eventually towed to the Thames for repairs. Between 2,000 and 3,000 French soldiers, who were on board when the bombs fell, were taken off by other craft, with the loss of only one man. At sea off Dunkirk, *Malines* rescued over 1,000 troops and naval ratings from the destroyer H.M.S. *Grafton* which sank after being torpedoed. Another exciting incident happened at St. Valery, when three boats from the *Archangel* were left behind to ferry troops from the beach to other vessels. The work was performed under fire from enemy coastal batteries, but the boats' crews came safely through the ordeal and were picked up by fishing vessels at the end of the operations.

On June 11, 1940, while in Havre Roads waiting orders, the steamer *Bruges* was bombed, and had to be beached in a sinking condition. Happily the crew escaped harm and, making their

way overland to the harbour, were brought home by *Vienna*. Two days afterwards, train ferry No. 2 was shelled off St. Valery and became a total loss. Unfortunately, 14 members of her crew were killed or missing. Later in the same month, train ferries Nos. 1 and 3, along with the *Antwerp*, *Malines*, *Sheringham*, and *Felixstowe*, were employed in bringing away civilians from the Channel Islands. Though *Sheringham* was a cargo boat, she carried 700 women and children on each of two homeward trips, and *Felixstowe* made one voyage with school children from Guernsey.

In July, 1940, the Admiralty put in hand extensive alterations to train ferries Nos. 1 and 3, which then received the pleasant-sounding names of H.M.S. *Iris* and *Daffodil* respectively. The Government acquired these vessels outright, and also purchased the ss. *Vienna*, which was popular in peace time as a cruising vessel. The Admiralty fitted out *Felixstowe* as a wreck dispersal vessel, increasing her gross tonnage by a third, and renaming her H.M.S. *Colchester*.

For a time *Amsterdam* and *Archangel* acted as transports between Aberdeen, Invergordon, Kirkwall and other places in the far north. In May, 1941, *Archangel* was attacked by enemy aircraft while on a voyage with troops from Kirkwall to Aberdeen. Casualties among the troops were heavy, and 17 of the crew were killed and 16 injured. The ship became a total loss and was replaced by *Prague* as soon as her repairs were completed. The two sister ships carried on a shuttle service between the mainland and the Orkney and Shetland Islands until the end of 1943. *Amsterdam* was then converted into a L.S.I. (H) to carry self-propelled landing craft for invasion purposes, and completed her share in the operations of June 6, 1944, successfully. Next, she was transformed on the Clyde into a hospital carrier, but unhappily, after making two trips from France, she was sunk by mines off the French coast in August, 1944, with a heavy loss of life amongst patients and crew. *Prague* was likewise fitted out as a hospital carrier. *Antwerp* and *Malines* were remodelled and despatched to foreign waters with Royal Navy crews, including some L.N.E.R. officers, who had taken commissions with the consent of the company. Of the Harwich fleet of 13 steamships, 6 will not return to their port and the remaining vessels have been subjected to so much hard usage that a number of new ships may have to be built for the Continental services which the L.N.E.R. decide to run in future. It should be added that from September, 1939, the company's marine workshops at Parkeston Quay were exclusively engaged on naval repairs to all classes of vessels.

For many years before the war, the L.N.E.R. was interested in

steamship services between the Humber ports and German, Dutch, Belgian, and French ports from Hamburg to Dunkirk. The company owned four passenger and cargo steamers of 1,680 gross tons each—*Accrington, Bury, Dewsbury,* and *Stockport*—and *Macclesfield,* a cargo ship of 1,000 tons. Through its subsidiary, the Hull & Netherlands Steamship Company, the L.N.E.R. owned the *Melrose Abbey* of 1,908 gross tons, which had accommodation for 120 passengers and over 1,000 tons of cargo. The railway company was also a partner in the Wilsons & N.E.R. Shipping Company, the proprietors of two cargo ships, *Harrogate* and *Selby,* of 1,000 tons each. All these vessels, along with the Goole fleet of the L.M.S.R., were managed by Associated Humber Lines, an organisation generally known as A.H.L. Between September, 1939, and May, 1940, modified services were run between the Humber and Holland, Belgium and France. A.H.L. was then left with idle ships on its hands, but soon found employment for them in coastwise trades. In the middle of 1941, it was decided that the activities of A.H.L. should be suspended until further notice and the vessels reverted to the management of their owners.

Soon after the change in management took place, the Admiralty began to requisition the five steamships equipped with passenger berths for convoy rescue work in the North Atlantic. At first, it was thought that the ships would simply put to sea for a moderate distance with an outgoing convoy, and return with an incoming one, but finally it was decided that they should accompany the convoys right across the Atlantic. On that difficult voyage the ships behaved wonderfully well, even in the wildest weather. The *Melrose Abbey,* which was the first ship to go on rescue work, completed a sailing distance of 100,000 miles between May, 1942, and November, 1944, never missing or delaying a convoy on 17 voyages overseas. Extensive alterations were required to fit the vessels for their arduous task. Their bunkers were increased to a capacity of 500 tons of coal. Accommodation was provided for a crew of more than 60 officers and men, two or three times the normal complement. A hospital and an operating theatre were constructed, and cabins were got ready for 125 rescued men. Additional lifeboats and rafts—including a motor lifeboat—were carried, and guns were fitted along with other protective equipment. The manning, victualling and bunkering of the ships were left to the L.N.E.R., which was fortunate in being able to arrange for the City Line to act as its agents in Glasgow, the home port of the rescue fleet.

A volume could be written about the exploits of the rescue ships, but two samples of the voyage reports made by their masters

may give some idea of the quiet courage shown by the men of the mercantile marine in carrying out their hazardous duties. The first extract is from what Captain L. E. Brown terms the report of proceedings of ss. *Bury* on May 11, 12, and 13, 1942.

" An explosion was heard away on my port side, my ship being in the rear of the Commodore's column. I at once increased to full speed, and crossed the sterns of the rear ships, and immediately sighted lights in the water. I picked up 45 survivors within 45 minutes of the ship being torpedoed.

" Continuing the search, I found 21 survivors from another ship, and these men were being cared for within 50 minutes of the first rescue. I searched for another hour, and was satisfied no one was left who was in need of help. I steamed around until daylight, knowing another attack had been made, and at 4 a.m., I found 38 men from another ship—one was badly injured, and had to be strapped up in splints before lifting aboard.

" Being broad daylight, I laid my course to rejoin the convoy, and after 20 hours' steaming found it. Then I was ordered to search an area of 50 miles, the wind being fresh and sea breaking. 0845 I sighted three lifeboats—one with one man in. Within a short time, I had aboard 34 men from a Swedish ship, torpedoed twice within 4 hours.

" I stood again 000, and at noon, I picked up 40 men from a British ship. I had no more success after searching, and had now 179 survivors on board. After an operation, the injured man died, and I buried him at sea. Five days later, I made port with food at a minimum, and my crew feeling the effects of attending to so many men ".

Even more impressive than this statement is the report of Captain T. E. Fea on the homeward voyage of *Stockport* in October–November, 1942.

" Shortly after midnight, the enemy attack commenced and the ss. " A " was torpedoed. The whole of her crew was picked up by *Stockport*.

" From this time onwards, attacks by enemy submarines were incessant night and day. It seemed to me just a succession of ships being torpedoed and sinking, and a constant stream of survivors coming on board to be cared for. The sights we saw were heartbreaking—two steamers, names unknown, blew to pieces (after being torpedoed) before our eyes and there were no survivors.

" Rescue work is very slow, even in good conditions, and in many instances, I spent several hours cruising to scattered groups of men ".

After rescuing survivors from six vessels, *Stockport's* propeller

was damaged, but she picked up 53 men from a seventh ship. She then had 320 men on board, 256 survivors, and 64 of her own crew, and was ordered to proceed to Iceland. *Stockport* broke out of the ring of submarines surrounding the main convoy with difficulty, and was badly shaken by a violent explosion under her keel, but reached Iceland safely. On the round voyage from this country and back, *Stockport* covered 5,645 miles in bitterly cold weather.

Captain Fea brought the *Stockport* safely through many other adventures, and saved altogether 413 lives. Sad to say, he and his gallant crew were lost on February 25, 1943, when it is presumed that *Stockport* stayed behind to search for survivors from a sinking ship, and was herself torpedoed.

The Ministry of War Transport marked its appreciation of the work done by the five L.N.E.R. vessels by recommending 24 awards to members of their crews for " good services ", and in April, 1944, a Commodore in charge of the North Atlantic convoys paid this fine tribute to the rescue ships :—

" In addition to their invaluable help when a disaster occurs, their presence in the convoy inspires a great feeling of confidence which contributes to a large extent towards keeping up the high morale of the personnel of the convoys.

" They are always in station, however bad the weather may be, and they are of very great assistance to the Commodore, both in repeating signals, and in keeping him informed of what is going on at the rear of the convoy.

" It is considered that the Masters, Officers and crews and the Medical Officers and their staffs of these ships are worthy of the highest praise, and have earned the gratitude of all sailing in convoys ".

Throughout the war, the ferry service between Hull and New Holland was run in daylight hours by the L.N.E.R. paddle steamers *Wingfield Castle, Tattershall Castle,* and *Lincoln Castle.* The third ferryboat was a new vessel, delivered in 1940 to replace *Killingholme,* which was chartered to the R.A.F. (Balloon Barrage Section) as a depot ship in Grimsby Roads. The Granton and Burntisland ferry across the Firth of Forth was closed in April, 1940, when the steamer *Thane of Fife* was requisitioned by the Admiralty.

Of the five L.N.E.R. steamers running on River Clyde services at the outbreak of war, only the *Lucy Ashton,* built in 1888, was not requisitioned. She maintained regular sailings on weekdays between Craigendoran and Dunoon, carrying 238,000 passengers in 1943, and cargo of every sort, from foodstuffs to materials for

H.M. Forces. *Waverley* was lost in the Dunkirk withdrawal, and *Marmion* off Harwich through enemy action in April, 1941. The popular *Jeanie Deans* and the diesel-electric paddle vessel *Talisman,* which also went on Admiralty service, had better luck.

S.R. Fleet

In peace-time, the Southern Railway had a fleet of 13 steamships based on Dover and Folkestone, comprising *Canterbury, Maid of Kent, Isle of Thanet, Maid of Orleans,* and *Biarritz* for passengers ; *Hythe, Tonbridge, Whitstable, Deal,* and *Maidstone* for cargo ; the motorcar transport *Autocarrier,* and the train ferryboats *Shepperton Ferry* and *Hampton Ferry.* With the aid of two French vessels, these steamers operated daily passenger and cargo services between Dover and Calais, and between Folkestone and Boulogne, while the train ferries kept up a daily service between Dover and Dunkirk. In addition, the *Twickenham Ferry,* owned by the French Railway, but under guarantee by the Southern Railway, maintained a night service in each direction between Dover and Dunkirk with London-Paris sleeping cars, and a day service with cargo. Though the five passenger steamers, and the two English train ferries, were requisitioned on the outbreak of war, the Southern Railway's Continental sailings were not brought to a standstill immediately. The remaining vessels, with help from the Southampton fleet, ran passenger services between Folkestone and Calais and Boulogne. Later, a cargo service was started between Dover and Calais. The *Twickenham Ferry* continued to ply on the Dover-Dunkirk route, and the Belgian State Marine transferred some of its Ostend steamers from Dover to Folkestone. Passenger business naturally fell to a low level, but inward cargoes were heavy until Germany overran Belgium and France. In the months September to May, 1939–1940, imports and exports at Folkestone amounted to 61,200 tons, more than four times the tonnage for the corresponding period of 1938–1939. The Dover-Calais cargo service also showed an increase, but carryings between Dover and Dunkirk declined, as the route was used for military traffic outwards and for long periods only one ferryboat was available.

From December, 1939, to May, 1940, three of the S.R. requisitioned steamships—*Canterbury, Maid of Orleans,* and *Biarritz*—acted as B.E.F. leave boats between Dover and Boulogne. Assisted by the L.M.S.R. steamer *Princess Maud* and three other vessels, they carried 180,000 officers and men across the Channel from France as well as large quantities of mails. On the outward

journey, troop carryings were about 15 per cent. fewer, but a heavy parcel post was handled. About the time when the leave boats ceased to pass to and fro, *Autocarrier* and the five steamers were taken over for short terms by the Ministry of Shipping. On May 21, 1940, *Maid of Kent* was bombed and sunk at Dieppe although she bore the signs and markings of a hospital carrier. Of the ship's company, who were all on board when the attack took place, 17 were lost. Happily not one of the seven Dover and Folkestone vessels engaged in the Dunkirk evacuation came to grief. In June, 1940, *Maidstone* and *Deal* conveyed troops from St. Malo to Plymouth, and with *Shepperton Ferry*, *Autocarrier*, and the three other cargo ships, took part in the evacuation of the Channel Islands. *Autocarrier* brought off the S.R. staff from Jersey and also embarked a number of French naval and military officers. The remaining vessels conveyed civilians, for whose comfort accommodation was improvised on the cargo ships.

After the Germans had taken the Channel Ports, the Dover vessels refitted at Southampton and proceeded to Northern waters to engage in ferrying troops from transatlantic liners to training centres in this country. They also acted as target ships for our dive bombers and were used for training Commandos to land on open beaches. Meanwhile the train ferries sailed between Stranraer and Larne, carrying troops and their mechanised transport. The smaller cargo vessels found employment in coastwise trade. The *Autocarrier* performed a unique function. Fitted as a welfare vessel, and based on Lyness, the ship became a recreational centre for crews of merchant ships. At her Northern base, where she remained until the end of the war, the *Aurocarrier* was very popular. In 1944 units of the Dover fleet played their part in the landings on the French coast. Soon after D-Day, the *Maid of Orleans* struck a mine on a return voyage from the Normandy beaches and foundered with the loss of six members of her crew. Some time previously, the *Tonbridge*, operating under the White Ensign, had been reported a casualty.

Another Continental route, operated by the Southern Railway, in conjunction with the French Railways, ran from Newhaven to Dieppe. The S.R. provided three passenger steamships—*Brighton*, *Worthing*, and *Paris*—leaving their French allies to furnish three passengers and three cargo vessels. During the summer of 1939, passenger business exceeded all previous records, but early in September the three English ships were taken over by the Government as troop carriers, and the Newhaven-Dieppe sailings were reduced from two to one a day in each direction. At the end of the month the passenger service was further reduced to a tri-

weekly one each way. The cargo service was closed for a time, but revived in mid-winter, when the Ministries of Food and Supply made large purchases on the Continent and materials for the use of the British and French Governments were shipped across the Channel. Between September, 1939, and May 18, 1940, when Dieppe was closed, 31,500 passengers were carried, including many important persons. The cargo boats conveyed 32,900 tons of merchandise and over 600 motor vehicles. The passenger and mail service was reopened with a sailing from Newhaven to Dieppe on January 15, 1945.

In January, 1940, the three S.R. ships were converted into hospital carriers. *Brighton* ran regularly between Dieppe and Newhaven, carrying about 250 casualties on some trips, until May 24, 1940, when she was sunk in the course of a heavy air raid on the French port. Happily her crew had been dispersed ashore and all its members eventually regained our shores. *Worthing* made five entries into Dunkirk, when the port was being bombed incessantly, but escaped without serious damage. In August, 1940, the Admiralty again altered the ship, and renamed her H.M.S. *Brigadier*. She remained on Naval service until December, 1944, when she was returned to the S.R. *Paris* was the only hospital ship to enter Calais during the May catastrophe. Her master, Captain E. Biles, took his ship in without a pilot, found a berth, where he assembled 349 casualties, and set out to sea in just over an hour. *Paris* also did fine work at Dunkirk, bringing away 740 cases on May 29. She made five entries into the port, where her crew went ashore to search for wounded men, and acted as stretcher-bearers in order to get the patients on board ship. When making a sixth outward voyage on June 2, *Paris* was bombed and sunk off Dunkirk, with the loss of two of her crew.

Altogether, 10 hospital carriers—all converted steamers belonging to the Southern and Great Western Railways—were based on Newhaven, which was No. 1 Ambulance Port for the B.E.F. During the Dunkirk episode, this fleet brought home 20,000 casualties. The ships were turned round with all possible despatch, their victualling, watering and fuelling being performed by the Southern Railway. The organisation of the marine department was flexible enough to deal with the catering for crews, medical staff, and patients, and when the water supplies at Dunkirk were destroyed, 14,000 four-gallon petrol cans were worked to Newhaven by special train, filled with water, and shipped by outgoing vessels within 24 hours. Though all the water did not reach the thirsty troops on the French beaches, the effort was an excellent piece of improvisation.

From the middle of last century to the year 1940, railway-owned steamers ran regularly between Southampton and the Channel Islands, the service being continued without interruption during the last war. In August, 1939, daily sailings were maintained by four S.R. steamships—*Isle of Sark, Isle of Guernsey, Isle of Jersey,* and *Lorina.* In addition, the steamer *Brittany* ran four trips weekly between Jersey and St. Malo. Two Continental steamship services were also operated by the S.R. from Southampton. A nightly service to and from Havre was given by *Hautonia* and *Normannia*; and a nightly service was maintained to and from St. Malo by *St. Briac* and *Dinard,* as well as a daylight service, twice a week, by *Isle of Thanet.* In September, 1939, sailings to the Channel Islands and Havre became tri-weekly, and the St. Malo service was suspended, though *Brittany* kept a service going between Jersey and St. Malo to the end of December, 1939.

Communications with the Channel Islands were fraught with many difficulties during the first few months of war. Conditions in the Channel soon became adverse to navigation. Over and above the menace from submarines, mines and air-raids, the blackout and reduced navigation lights were a source of danger in waters full of shipping. On land H.M. Customs upset the usual system of shipping goods from wagon to steamer by insisting that all traffic for the islands must be pre-entered and produced before shipment. The withdrawal of the Great Western mail service, *via* Weymouth, added to the strain on the Southampton route. Yet some good results were obtained. From September to December, 1939, over 1,000,000 packages of tomatoes, weighing 7,240 tons, were imported from Jersey and 2,800 tons of tomatoes, vegetables and flowers from Guernsey. In May and June, 1940, the Jersey potato traffic amounted to 6,800 tons, while double that tonnage of tomatoes, vegetables and flowers originated in Guernsey in the six months January to June. On June 19, 1940, the Government withdrew our Forces from the Channel Islands and advised the inhabitants to leave. Many vessels, including 10 S.R. steamships, evacuated 8,000 people from Jersey, and 17,000 from Guernsey. *Isle of Sark* was the last vessel to leave Guernsey, with 650 passengers, before the Germans occupied the Islands on July 1, 1940. From the outbreak of war to that date, the S.R. steamships had conveyed to and from the Channel Islands, and between the islands, 62,650 passengers, 61,700 tons of cargo, nearly 20,000 bags of mail, 47,400 bags of parcel post, and many thousands of parcels. The majority of the joint Great Western and Southern Railway staff, who had dealt with this traffic, were left behind on the islands, and endured

the rigours of the German occupation. Some of them were deported to Germany and interned there.

In peace-time the Havre service was patronised by business men travelling to Paris and the South of France. The cargo carried consisted mainly of consignments in transit to North America, South America, and South Africa, with textiles from Switzerland and Italy, and French wines. The nature of the traffic changed with the coming of war. Citrus fruit from Spain and Palestine, potatoes from Spain, onions, butter, and other perishables were carried in large quantities. During the period from September, 1939, to May 20, 1940, when the service was abandoned, carryings amounted to nearly 15,000 passengers, 52,000 bags of mail, 11,000 packages of parcel post, and 13,750 tons of cargo.

Though the direct St. Malo service was withdrawn on September 6, 1939, a link was kept with the Jersey sailings, first by the *Brittany*, and from January, 1940, by a fortnightly trip made by the Southampton-Channel Islands steamer. *Hautonia* sailed for the last time from St. Malo, on June 16, 1940, carrying 700 passengers straight across to Southampton. The railway agent and his clerk escaped by this steamer. During the war months, he had dealt with 9,000 passengers, 300 motor cars, 27,000 bags of mail and parcels, and 3,900 tons of cargo.

Four of the Southampton steamships—*Isle of Guernsey, Isle of Jersey, Dinard,* and *Lorina*—were requisitioned early in the war, the first three as hospital carriers. After the retirement from the Channel Islands, the rest of the fleet, including the four cargo boats *Haslemere, Fratton, Minster,* and *Ringwood,* were chartered by the Government at various dates. *Lorina* and *Normannia* were sunk off Dunkirk, eight Southern Railway staff going down with the former vessel. *St. Briac* was lost off the east coast of Scotland in March, 1942, with six members of her crew. *Minster* was sunk in the course of D-Day operations, June, 1944, and *Fratton* was lost by enemy action in August, 1944. It is remarkable that the rest of the fleet escaped serious damage, as the vessels were frequently engaged on dangerous service. The record of *Dinard* was especially good. After rescuing 371 men from Dunkirk, she was used for a time as a floating hospital for merchant seamen saved from ships which had been sunk by enemy attack. In 1943, she was fitted out for service in the Mediterranean, where she visited 30 ports, steamed over 30,000 miles, and carried nearly 7,600 patients. When the ship's commission was completed in April, 1944, the Director of Medical Services, Allied Forces, thanked her Master, officers and crew " for their devotion and loyal service, which resulted

in the saving of many lives and the alleviation of much suffering ". *Dinard's* next important duty was to bring back wounded men from the Normandy beaches in June, 1944. On the 7th of the month, she was struck by a mine and was towed back to Southampton for repairs. She was soon in active service again, and by December, 1944, performed 37 round trips across the Channel, and carried 6,700 patients. *Isle of Jersey*, which was employed as a naval hospital ship with the Home Fleet in northern waters, was also sent down to operate in the pool of military carriers from the Normandy beaches. She made 11 voyages between June 8 and July 16 with close upon 2,000 patients. Her sister ship *Isle of Guernsey* took a prominent part in exercises and training for D-Day, and on June 6, 1944, landed Canadian troops near Bernières. About a year later, on June 25, 1945, the Channel Islands service was resumed with a sailing from Southampton to Guernsey and Jersey.

Before the war, the Southern Railway carried over 1,000,000 passengers a year between Portsmouth and Ryde, in the Isle of Wight, and also ran a motor vehicle ferry to and from Fishbourne. These services were continued, in spite of the war, but passenger traffic was reduced to about one-third of the peace-time volume. On the other hand, goods traffic was four times as large as in 1938. Normally seven vessels were engaged in the Portsmouth services, but the number was reduced to two in 1944. *Portsdown* was blown up, either by a mine or a bomb, on September 20, 1941, while on passage to Ryde, and eight of her crew of 11 were lost. *Shanklin* had several hazardous voyages, and *Southsea* was lost when acting as a minesweeper. A second route from Lymington to Yarmouth, Isle of Wight, was worked by the paddle steamers *Freshwater* and *Solent*, and the motor ferry *Lymington*. The war halved the passenger carryings of over 100,000 a year, but inflated the number of motor vehicles passing to and from the island. *Freshwater* was taken over by the Government in 1940, and *Solent* was used as a troop tender during the preparations for D-Day.

The Marine Department of the Southern Railway at Southampton ordinarily looked after 13 steamships, but during the war, acted in the capacity of managers to as many as 55 vessels, owned by British railway companies and by the Belgian State Railways. This involved the payment of crews, the supply of all stores, supervision of repairs, and attention to a host of detail matters. The work was organised to the complete satisfaction of the steamship owners and of the Ministry of War Transport. The marine workshops at Southampton were equally successful in handling a great variety of conversion and repair work, dealing not only

with railway-owned vessels, but with ships belonging to the Royal Navy and the general mercantile marine. To the end of 1943, work of all kinds was carried out on 803 vessels. Extensive overhauls and repairs were also carried out at Newhaven marine workshops, both to railway steamships and to naval craft which were based on the port in large numbers. The marine workshops at Dover formed another scene of activity, servicing ships of the Dover Patrol, auxiliary vessels, transports, and minelayers. On July 1, 1940, the Admiralty took over the Dover workshops, paying rent for the premises and plant, and continuing to employ the S.R. staff. The facilities provided by the Southern Railway at its three principal ports were invaluable in keeping seaworthy the ships which defied the enemy's efforts to close the English Channel.

G.W.R. Fleet

The summer 1939 programme of G.W.R. mailboat sailings provided for a daily service between Weymouth and the Channel Islands. The passenger vessels engaged were *St. Julien* and *St. Helier*, with *St. Patrick* as a relief boat. Cargo only was carried by *Roebuck* and *Sambur*. On September 9, 1939, passenger sailings were suspended, but cargo continued to pass until June, 1940, the last consignment to reach Weymouth consisting of 285 tons of potatoes. Between June 20 and 28, when the civil population of the Channel Islands was evacuated, 25,500 people were landed at Weymouth Quay from 55 ships impressed for the emergency.

St. Julien was at once requisitioned, and used as a troop carrier, but later was converted to a hospital carrier. After making a number of trips with casualties from Dieppe and Boulogne, *St. Julien* was in the thick of the fray at Dunkirk, being repeatedly attacked from the air, and by shore batteries. She made six attempts to enter the port, and succeeded twice in rescuing numbers of wounded men. Soon afterwards, she brought over casualties from Cherbourg to Newhaven, and was then transferred to the North of Scotland. In June, 1943, *St. Julien* sailed for the Mediterranean, where she covered nearly 30,000 miles between various ports, and took part in removing wounded from Anzio Beach. Her sister ship, *St. Helier*, was also taken over by the Government, and did excellent service at Dunkirk, bringing off 1,500 people on May 23, about 2,000 troops on May 29, another 2,000 next day, and 1,600 French troops on May 31. *St. Helier* was attacked fiercely on several occasions, but returned to Dunkirk on June 1, and lay in port for seven hours waiting to load 40 stretcher cases. After the wounded had been taken on board, troops were

shipped, and *St. Helier* ran the gauntlet of shell fire from coastal batteries as she stood out to sea. Nothing daunted, she went back next day, and landed about 2,300 British troops, the last contingent of the B.E.F., at Folkestone on the morning of June 3. *St. Helier* had other adventures off St. Malo and La Pallice, but came through safely, to be taken over by the Navy, and manned by a naval crew. The two cargo ships were also requisitioned to assist in evacuating troops from the Continent. *Roebuck* was despatched to La Panne, nine miles east of Dunkirk, but her captain reported that " it was agonizing to watch the thousands of our men on the beaches and find we could not do anything ", owing to a freshening north-east breeze. The vessel did, however, enter Dunkirk at the most difficult time, and took on board 47 stretcher cases, 72 other wounded, and about 450 troops, all of whom she landed at Dover on June 1. On June 12, *Roebuck* and *Sambur* left Weymouth for St. Valery-en-Caux, only to find the Germans in possession of the shore. Both ships were shelled, some of their officers and men being killed, and injured, but made their way back to Newhaven. After being repaired, they passed into naval service, and in June, 1944, took part in the Normandy landings, doing good work with the Royal Engineers.

At Plymouth, four passenger vessels with historical names were employed as tenders between ocean liners and the docks—*Sir Richard Grenville, Sir Walter Raleigh, Sir Francis Drake,* and *Sir John Hawkins.* They were naturally earmarked by the Admiralty for naval service, as were the three steamships employed on the nightly service between Fishguard and Rosslare, *St. Andrew, St. David,* and *St. Patrick.* The first two vessels became hospital carriers, but *St. Patrick* was soon released, and ran a tri-weekly service across the Irish Channel until June 13, 1941, when she was bombed and sunk on passage to Fishguard. She carried a crew of 45 and 45 passengers. The number of lives lost was 30, including the Captain and 17 members of his crew. The tri-weekly sailings were maintained by other vessels until January, 1942, when the passenger service was suspended, as few people were travelling. In the following June, the Ministry of War Transport agreed that the route might also be closed for goods traffic until there was a material increase in the flow of traffic to and from Eire.

Prior to the war, a tri-weekly service was run between Fishguard and Waterford for passengers, cargo, and cattle. This was continued by ss. *Great Western* until August, 1940, when the sailings were reduced to two a week, owing to the sowing of a minefield off the south coast of Ireland and the closing of the port of Waterford between sunset and sunrise. The reduced service went on,

with a few interruptions, until April, 1944. *Great Western* was then withdrawn for Government service and did not resume a twice-a-week service for cargo and cattle only until the end of August, 1944. Almost a year later, the tri-weekly service for passengers, cargo, and cattle was reinstated.

The story of the *St. Andrew* and *St. David* remains to be told. The two ships shared in the perils of Dunkirk, where the crews, although tired and weary, carried out their duties with coolness and courage, every man volunteering to help in embarking wounded. After spending two quiet years in Scottish waters, the ships proceeded to the Mediterranean, and arrived in July, 1943, in time for the Sicilian campaign and the landing at Salerno. They made many voyages between Italian ports, Malta, and North Africa, sometimes steaming for 1,000 miles on a single trip. The vessels were frequently attacked from the air, and on the evening of January 24, 1944, *St. David* was sunk about 25 miles south-west of the Anzio beach. Captain E. W. Owens went down with his ship and 56 others perished. The survivors numbered 159, of whom 60 were rescued by boats from *St. Andrew*. In the previous September, *St. Andrew* had rescued 195 people, including 110 nurses, from the hospital carrier *Newfoundland*, when it was bombed and set on fire. During her service in the Mediterranean *St. David* sailed about 25,000 miles and carried about 6,000 patients.

After the loss of her sister-ship, *St. Andrew* made 37 more trips to Anzio, and was later engaged in carrying wounded from Ancona to Bari. On her last passage between these places, in September, 1944, she was mined, towed to Taranto for repairs, and then brought back to Birkenhead for a thorough overhaul. From the time of leaving England until she was disabled, *St. Andrew* steamed 46,000 miles and conveyed over 15,000 patients.

In ordinary times the marine workshops at Fishguard carry out running repairs for the G.W.R. steamships, but during the war they performed a considerable amount of emergency work for Government vessels. Submarines, minesweepers, naval tenders, and landing craft were handled successfully, and the repairs were often of an urgent nature. The small marine workshops at Weymouth were occupied by the War Department and the Admiralty.

L.M.S.R. Fleet

Before the war, the L.M.S.R. owned 66 vessels, 3 jointly with the L.N.E.R., with a total gross tonnage of 67,360. Of this fleet, 27 were vessels ranging in size from 1,000 to 3,814 gross register tonnage. No fewer than 35 ships were requisitioned for periods

of varying length, and 8 of these were lost on Government service, including *Scotia* and *Princess Victoria*, both spacious vessels. These losses were not excessive when the dangerous nature of the work undertaken is considered. *Scotia* was sunk by enemy aircraft off Dunkirk. She had on board 2,000 French troops and happily the majority of them, and the crew, were picked up by destroyers. *Princess Victoria* was designed and commissioned in 1939, to cater for motor car traffic between Stranraer and Larne. Converted into a minelayer, she was herself sunk by an enemy mine off the east coast in May, 1940, with the loss of 3 officers and 31 ratings, of whom 7 were L.M.S.R. employees. *Princess Maud* had a narrow escape at Dunkirk, where she did capital service. She was severely damaged in a bombardment by shore batteries, but carried on to the end, after temporary repairs were effected. Unfortunately, a number of the crew were killed and injured. *Duke of York* was also fortunate to escape with some damage when assisting in the withdrawal of British and French troops from St. Valery.

In the summer of 1939, the L.M.S.R. had 3 steamers engaged on the Holyhead—Kingstown Royal Mail service, and 5 on the services between Holyhead and Dublin (North Wall), and Greenore. As the port of Holyhead was closed to shipping during the hours of darkness, the twice-daily sailings to Kingstown were reduced to one daylight voyage, and in 1941 the Sunday mail service was suspended. Between April and August, 1944, only three trips a week in each direction were given, as the issue of exit permits was restricted to people travelling on business of national importance. From the outbreak of hostilities, travellers to and from Eire or Northern Ireland were required to obtain these permits before they were permitted to go on board ship, and were subject to examination by Immigration Officers at the ports. About 60,000 Eire workers were employed in Great Britain, and the number of passengers crossing the Irish Channel was consequently large. The steamships were not allowed to carry a greater number of passengers than could be accommodated in the lifeboats and liferafts, so that a system for regulating travel had to be devised. The essence of the scheme was that passengers were asked to apply to the port of embarkation for a sailing ticket, and the holders of these tickets were given priority in going on board. The scheme was first tried at Christmas, 1940, and continued to operate throughout the war.

Carryings of merchandise and livestock between Holyhead and Dublin (North Wall), and Greenore fluctuated considerably, but sufficient tonnage offered to keep 3 or 4 steamships employed. At one stage, traffic for Northern Ireland was diverted to the Greenore service, in order to relieve the Heysham route. In April,

1944, a twice-weekly service was established between Holyhead and Belfast, in place of the Greenore sailings, but the old arrangements were soon restored. There were also large variations in the tonnage of cargo passing through Heysham, and, to avoid the necessity of placing frequent restrictions on the forwarding of traffic, a new service between Heysham and Greenore was started in June, 1941, and was carried on with a number of breaks until January, 1945. After the Greenore sailings ceased, three steamers maintained the cargo service between Heysham and Belfast. The Royal Mail service between these ports was a daily one in peace-time, with extra sailings in summer. In September, 1939, the sailings were interrupted by the requisitioning of the three passenger steamers *Duke of Rothesay*, *Duke of Argyll*, and *Duke of York*. A little later, the *Duke of Lancaster* also went for a month on Government service. Though these steamships were returned to the L.M.S.R. at different dates, two were again requisitioned in April, 1942, one in 1943, and the fourth in January, 1944. The *Cambria* was then transferred from Holyhead to Heysham, and ran to Belfast until the passenger service was suspended in April, 1944. Sailings on alternate days were resumed in August, 1944, and, by ingenious shifts and adjustments, a daily service was maintained after Christmas, 1944, with a few interruptions.

A third route to Ireland was operated by the L.M.S.R. between Stranraer and Larne. The vessels assigned to it in peace-time were *Princess Maud* and the new diesel ship *Princess Victoria*. When they departed on more serious occasions in September, 1939, *Princess Margaret* kept a daily mail service going, until she was taken over by the Ministry of War Transport in January, 1944, and fitted out to take part in D-Day operations. Her place was filled by m.v. *Royal Daffodil*, which used to run excursions from the River Thames to the Continent. At the end of the year *Princess Margaret* was released, and once more made the passage between Scotland and Northern Ireland. Military traffic on the route was heavy and, from time to time, 10 requisitioned vessels were engaged in dealing with it. Originally the sailings of these vessels were regulated by Sea Transport Officers stationed at Stranraer and Larne, but in February, 1943, full control of the working was handed over to the L.M.S.R. During the last four winters a heavy milk traffic was conveyed from Northern Ireland to Scotland through Stranraer and Cape Ryan by vessels chartered by the Company.

On all three routes to Ireland the marine and shore staff of the L.M.S.R. had a strenuous time during the war. The routes followed by the steamships under orders added to the length of

their peace-time voyages, and gave less time in port for handling cargo. Ports were often closed to shipping, owing to enemy action, so that traffic had to be diverted to other routes at short notice. Admiralty instructions frequently upset the railway timetables. In February, 1941, to quote an example, ships were ordered to proceed at not more than 9 knots when in shallow water, and this extended the passage times of the Heysham and Belfast steamboats by three hours. Lighting restrictions, on shore and at sea, laid a great deal of responsibility on the Masters for the safe navigation of their ships. Altogether, a valuable service to the nation was performed in maintaining Irish communications with reasonable regularity.

The Firth of Clyde has long been famous for the sailings carried on by the railway companies between the numerous ports and piers situated on the river and its magnificent estuary. Through subsidiary companies, known as the Caledonian Steam Packet Company Limited and Williamson-Buchanan Steamers (1936) Limited, the L.M.S.R. had 21 vessels engaged on Clyde services before the war. At the beginning of September, 1939, sailings from Ardrossan, Greenock (Princes Pier), and Glasgow (Bridge Wharf) were cancelled, and sailings were not given from Gourock to places below Dunoon, owing to the erection of a boom across the river. An attenuated programme was based on the running of four steamers from October to April, and five from April to September. During the first two winters of the war Admiralty restrictions on movement during the hours of darkness were severe, but were relaxed in the winter of 1942–1943, and the Clyde coast services met essential needs. The number of passengers using the steamers in war-time winters was larger than the peace-time figure because many people had taken refuge from air-raids in the coast towns, and members of H.M. Forces travelled freely. The vessels ordinarily engaged in the coast services were *Queen Mary II*, *Duchess of Montrose*, *Glen Sannox*, *Marchioness of Graham*, and *Marchioness of Lorne*.

Three other L.M.S.R. vessels were kept ready at Gourock for the conveyance of troops to and from transports as required by the Sea Transport Officer. Gourock Pier was also used extensively by craft conveying dockers and stevedores to vessels discharging cargo in the river. Of the vessels used for this purpose, 14 were under the management of the L.M.S.R., who supervised the manning, payment of crews, coaling, supply of stores, and general maintenance. The vessels were gathered together from all quarters, and, as most of them were old, needed constant attention. In the meantime, the Clyde paddle steamers, which had been requisitioned

and converted into minesweepers, were doing essential and risky work, as five of them had done in the last war. One of the five, *Kylemore*, was lost in August, 1940, and in March, 1941, *Juno* was sunk in an air-raid on London docks.

As explained earlier, the L.M.S.R. steamships trading from Goole to the Continent were under the management of Associated Humber Lines in 1939. Some of the vessels were requisitioned, on occasion, for special war work, but the fleet spent most of its time in commercial trading. In April, 1940, *Mersey*, bound from Antwerp to Goole, with cargo, was sunk by enemy action in the Downs. This was the first marine loss suffered by the L.M.S.R. in the war. With the ship went down 14 of the crew, including the Master. *Ouse* and *Rye* were in a convoy which was attacked in the English Channel by " E " boats in August, 1940. In the confusion, the two ships collided. *Ouse* was sunk, but happily her crew were picked up by *Rye*. In March, 1941, *Rye* was sunk while proceeding in convoy along the east coast, and, so far as is known, not one member of the crew survived. Other Goole vessels were attacked on passage, but put up a stout defence and escaped serious damage. Two of them, *Blyth* and *Hebble*, won great credit by assisting to fight fires at Liverpool docks during the air raids on the Mersey port in December, 1940.

During the war, the L.M.S.R. suspended the services run by small vessels on Loch Tay, Loch Awe, Lake Windermere, and Lake Coniston, but two steamers, jointly owned with the L.N.E.R., continued to ply on Loch Lomond. The company also kept 5 vessels at work on the Tilbury and Gravesend ferry. Large convoys of road vehicles used the ferry, as well as troops travelling to and from Woolwich. The three passenger boats ferried 100,000 men of the Liberation Army to invasion craft anchored in the River Thames in readiness for D-Day operations, and were busy at most week-ends carrying "libertymen" between the shore and their ships.

Honours Conferred on Staff Employed on Requisitioned Steamships

It is impossible to chronicle here all the exciting incidents which occurred during the wartime service of the railway-owned steamships, but perhaps enough has been said to show that their Masters and crews carried on in accordance with the best traditions of our Mercantile Marine, whether the vessels were engaged on dangerous naval and military ventures, or were making essential voyages in home waters. The long list of awards to officers and

seamen appearing in Appendix 20 indicates how highly the Admiralty, the War Office, and Ministry of War Transport appreciated the courage and zeal of the railway companies' staff who go down to the sea in ships.

Terms and Conditions of Requisitioning

One important subject remains to be explained—the terms and conditions applicable to railway-owned vessels requisitioned for Government service. A committee, composed of Mr. F. R. E. Davis, G.W.R.; Mr. G. Morton, L.M.S.R.; Mr. A. L. Gibson, L.N.E.R.; and Mr. R. P. Biddle (succeeded by Mr. H. A. Short), S.R., was appointed early in 1940 to negotiate a settlement of the financial and other questions involved. After protracted discussions with the Ministry of Shipping, agreement on all points was reached in the middle of 1942. The complete arrangements were incorporated in Charter Party T 98A (Railway Vessels), and applied only to railway ships taken over for the exclusive use of the Government. A summary of the principal provisions follows :—

(i) *Rate of Hire for Requisitioned Vessels*

To consist of an allowance for depreciation and return on capital calculated as under :—

For Vessels under 20 years of age

At the rate of 10 per cent. per annum on first cost, plus one-half of the aggregate (if not less than £750) of any additional sums expended on the ship and allowed as capital expenditure for Income Tax purposes.

For other Vessels

At the rate of 10 per cent. per annum on the basic value of the ship or on its first cost, whichever is lower.

(" Basic value ", mentioned above, and again in paragraph (iv) below, corresponds roughly to the War Risks Insurance valuation of a vessel at the outbreak of the war.)

(ii) *Expenses of Operation and Maintenance*

The railway companies to be reimbursed all costs and expenses incurred by them in the running and maintenance of requisitioned ships, and, in addition, to receive an allowance to cover organisation and management expenses.

(iii) *War, Marine, and other Risks*

All risk of ship and stores to be borne by the Government.

(iv) *Compensation for lost Vessels*

Compensation payable to the owning Company is respect of the actual or constructive total loss of a requisitioned ship to take the form of a cash payment equal to the basic value of the vessel, plus a credit in the Government Tonnage Replacement Account of an amount representing 25 per cent. of the basic value, to cover its subsequent increase in value.

(v) *Re-delivery of Requisitioned Vessels*

A requisitioned vessel to be handed back to its owners in the same good order—fair wear and tear and depreciation excepted—as it was when taken over by the Government.

These general provisions were subject to a number of qualifications, and left room for much argument over individual cases, but the arrangements worked well, when interpreted by officers experienced in marine matters, and were equitable to all the contracting parties.

CHAPTER 20

Review of Railway Operating Results

In peace-time, the Ministry of Transport published an annual set of returns relating to the capital, traffic, receipts, working expenses, and operating results of the railways. The last issue of these returns referred to the year 1938, and, during the first five years of war, the Government declined, for security reasons, to publish any detailed statistical statement of railway performance. It was not until October, 1944, that the companies and the L.P.T.B. were permitted to use the principal figures for 1943 in a booklet entitled " British Railways : Facts and Figures ", which they circulated widely, with the object of giving some idea of the scope of the railway war effort. The Government of the U.S.A. went to the other extreme. Not only were all the usual statistics, including weekly figures of car-loadings, available promptly, but the Government instituted more than one enquiry into the efficiency of railway operation, and printed the evidence in full. With a wealth of statistics covering all forms of inland transport, the Association of American Railroads was able to prove that railway traffic expanded at a much greater rate from 1939 to 1944 than the traffic handled by other transport agencies. Railway freight traffic increased by 121 per cent. during that time, whereas waterways, including the Great Lakes, rivers, and canals, had an improvement of 51 per cent., and road haulage was only 5 per cent. greater. Conveyance of petroleum products by pipeline was up by 74 per cent., owing to the building of new routes by the Government. During the same period, the volume of railway passenger traffic grew by 322 per cent., while motorbus business increased by 190 per cent., and air passenger transport by 195 per cent. These variations are calculated on the basis of freight ton-miles and passenger miles respectively.

Owing to the dearth of transport statistics, comparative figures cannot be worked out for Great Britain, but the railway operating results for the war years 1940 to 1944 are given below in a series of tables, along with the corresponding figures for the pre-war period of 12 months from September, 1938, to August, 1939, inclusive. In contrasting these results with the spectacular American performance, it should be borne in mind that the density of railway traffic in this country, as measured by the average number of

train-miles run over a route-mile in a year, has always been very high. On the American railways, taken as a whole, there was more spare room for extra war specials, but many of the spare paths were soon filled. From the date of America's entry into the war, to June 30, 1945, nearly 31,000,000 troops were transported in the United States in organised movements by rail. The number transported by road was 731,000, or less than 2·5 per cent. of the rail carryings. In the same period, 278,000,000 tons of army freight were moved by rail, 25,000,000 tons by road, and 4,000,000 tons by inland waterways, so that the railways conveyed 90 per cent. of the traffic, as well as doing most of the long haulage. From this digression, we turn to the analysis of our own statistics.

Passenger Traffic

Table 1 gives the number of passenger journeys originating on the four railway systems, and shows that travel grew in volume from year to year, the total increase for 1944 over the pre-war period being 7 per cent. The increase of 48 per cent. on the Great Western is in striking contrast to the decrease of 4 per cent. on the Southern Railway.

1. Number of Passenger Journeys originating (Millions)

	Pre-War	1940	1941	1942	1943	1944	Per cent. increase 1944 over pre-war
G.W.R.	129	118	145	168	188	190	48
L.M.S.R.	421	342	378	435	458	456	8
L.N.E.R.	281	215	225	265	287	283	1
S.R.	361	256	230	293	335	347	—4*
Total ..	1,192	931	978	1,161	1,268	1,276	7

*decrease

Tables 2 and 3 give details of the bookings of the G.W.R. and S.R., according to the class of ticket used.

2. G.W.R. Passenger Journeys (Millions)

	Pre-War	1940	1941	1942	1943	1944	Per cent. increase 1944 over pre-war
Full fare	10	11	12	15	19	20	100
Monthly return, excursion, week-end, and tourist	51	37	43	50	55	55	8
Workmen	25	27	40	45	47	42	72
Others	7	12	18	24	30	34	382
Season tickets	36	31	32	34	37	39	8

3. S.R. Passenger Journeys (Millions)

	Pre-War	1940	1941	1942	1943	1944	*Per cent. decrease 1944 from pre-war*
Full fare, ...	35	25	21	27	25	26	26
Monthly return, excursion, week-end, and tourist	108	60	53	71	88	87	19
Workmen	73	63	59	66	66	66	10
Others	12	18	26	42	59	66	458*
Season tickets	133	90	71	87	97	102	23

*increase

The Great Western was the only company to have an increase under every head. The L.M.S.R., the L.N.E.R. and the Southern all carried fewer holders of monthly return tickets, and of season tickets, but the Southern alone had decreases in the number of passengers paying full fare, and in workmen's tickets. While the figures show the general trend of traffic, too much stress should not be put on the comparisons between the years, particularly under the head of " Other descriptions of tickets ", as the use of combined leave and railway tickets was extended in October, 1942, and duty warrants were treated as single journey rail tickets as from May, 1944.

Coaching Train Mileage

The mere numbers of passengers carried are but a partial measure of the work done by the companies. Each passenger travelled on an average 25 miles in 1943, more than half as far again as he went before the war, and it is estimated that in consequence passenger miles were higher by 70 per cent. The railways contrived to handle all this travel in 1943 with a coaching train mileage, loaded and empty, short of the pre-war level by 29 per cent. From table 4, it will be seen that the L.M.S.R. cut its peace-time mileage by no less than 32 per cent. in 1944, despite an 8 per cent. increase in the number of passengers originating over the pre-war figure. On all busy lines, there was inevitably a great deal of overcrowding, though some relief was obtained by reducing sleeping car and restaurant car facilities. The average load carried by passenger train in 1943 was more than twice the pre-war figure, and it was not possible to maintain old standards of punctuality. Nevertheless, coaching train engines spent fewer hours in traffic in 1943 and 1944 than in the three previous years, as will be seen from the details in Table 5.

4. *Coaching Train Miles, loaded and empty (Millions)*

	Pre-War	1940	1941	1942	1943	1944	Per cent. decrease 1944 from pre-war
G.W.R.	43	34	34	34	34	33	23
L.M.S.R.	103	69	71	71	71	70	32
L.N.E.R.	74	52	53	52	53	53	29
S.R.	65	44	42	44	44	44	32
Total	285	199	200	201	202	200	30

5. *Coaching Train Engine Hours in Traffic (Tens of Thousands)*

	Pre-War	1940	1941	1942	1943	1944	Per cent. decrease 1944 from pre-war
G.W.R.	303	270	276	272	272	272	10
L.M.S.R.	714	542	549	545	532	527	26
L.N.E.R.	513	414	426	417	416	410	20
S.R.	357	275	266	270	273	276	23
Total	1,887	1,501	1,517	1,504	1,493	1,485	21

Coaching engines spent rather more hours on shunting work, and other duties, in 1944 than in the other war years, but fewer than in the pre-war period, so that the total coaching engine hours in traffic for all purposes were 18 per cent. less in 1944 than pre-war. Owing to the slowing down of express trains, the average number of train miles run per train hour fell from 15 pre-war to 13 in 1944. Thanks largely to the quick turnround of its electric motor vehicles, the Southern Railway always sets the pace as measured by this statistic, and came out satisfactorily with an average of 16 in 1944, as compared with 18 pre-war.

Parcels and Miscellaneous Traffic by Passenger Train

Before the war, the Ministry of Transport published in the annual railway returns the gross receipts from the carriage of parcels and other traffic charged at passenger train rates, with separate figures for parcels (under two cwts.), and the principal traffics, such as newspapers, fish, and milk. The total revenue from this source was steadily in the neighbourhood of £12,800,000 a year. Details for the war period are not on record, but taking 1939 as a standard, the total receipts increased after 1940 as shown below :—

1939	£100
1940	98
1941	110
1942	122
1943	136
1944	151

After allowing for the higher charges in force since 1940, the comparison points to a substantial increase in the volume of parcels business.

Freight Traffic

Complete statistics of freight traffic are not available for the whole of the war period, and there is an element of estimate about the ton-mileage figures, which necessarily affects other figures derived from them, such as length of haul. The margin of error in the estimated results is believed to be so small that all the statistics are treated in the paragraphs below as though they represented actual records. In the first place, exact particulars of freight traffic originating are given in tables 6 to 9 under the three divisions of

6 Merchandise (excluding classes 1 to 6) and Livestock ;
7 Minerals and Merchandise (classes 1 to 6) ; and
8 Coal, Coke, and Patent Fuel.

6. Merchandise (excluding classes 1 to 6) and Livestock Originating (Millions of tons)

	Pre-War	1940	1941	1942	1943	1944	*Per cent. increase 1944 over pre-war*
G.W.R.	9	12	13	15	17	19	103
L.M.S.R.	19	24	25	30	34	36	94
L.N.E.R.	16	18	19	20	24	25	54
S.R.	3	4	4	5	6	6	105
Total	47	58	61	70	81	86	83

7. Minerals and Merchandise (classes 1 to 6) Originating (Millions of tons)

	Pre-War	1940	1941	1942	1943	1944	*Per cent. increase 1944 over pre-war*
G.W.R.	7	8	8	8	9	8	14
L.M.S.R.	20	27	28	28	27	24	19
L.N.E.R.	17	21	22	22	23	20	16
S.R.	1	1	2	2	2	2	29
Total	46	58	61	61	61	54	17

8. Coal, Coke, and Patent Fuel Originating (Millions of tons)

	Pre-War	1940	1941	1942	1943	1944	*Per cent. decrease 1944 from pre-war*
G.W.R.	36	32	27	26	25	23	38
L.M.S.R.	66	69	64	64	63	60	8
L.N.E.R.	74	71	67	67	64	63	15
S.R.	3	3	4	4	3	3	10
Total	179	175	161	160	155	149	17

9. Aggregate of all classes of Freight Originating (Millions of tons)

	Pre-War	1940	1941	1942	1943	1944	*Per cent. increase 1944 over pre-war*
G.W.R.	53	52	48	49	51	50	—6*
L.M.S.R.	105	120	117	122	124	121	15
L.N.E.R.	107	110	109	109	111	107	—
S.R.	8	8	9	11	11	11	41
Total	273	291	283	291	297	289	6

*decrease

While tables 6 and 7 show increases of 83 per cent. and 17 per cent. respectively in 1944 over pre-war, table 8 reveals a decrease of 17 per cent. in the tonnage of coal and coke, which constituted 65 per cent. of the total carryings in peace-time. The total originating tonnage reached a peak in 1943, when the railways had to handle 297 million tons of traffic, as compared with 273 million tons in the pre-war period. This increase of 9 per cent. may not appear formidable, seeing that the railways carried without difficulty 318 million tons in 1937, when livestock and free-hauled traffic, other than the tonnage conveyed in departmental trains, are included. The strain on the railways cannot, however, be gauged by weight alone. The increase in high class merchandise, by far the most awkward description of traffic to handle, was abnormal, and other factors, as will be gathered shortly, transformed the character of the task which the railways were called upon to perform.

Net Ton-Miles

The net ton-miles worked by the railways afford an adequate measure of their war effort. Table 10 compares the 1943 results with pre-war figures, and shows an increase of 46 per cent. For merchandise and minerals, ton-mileage increased faster than tonnage, but more remarkable still was the increase of 13 per cent. in ton-miles for coal, coke, and patent fuel, despite a 14 per cent. drop in the weight declared for carriage. The haul for all classes of traffic was materially lengthened, as shown in table 11. The effect of the long hauls was to lift the 1943 ton-mileage above the 1937 level by 31 per cent.

10. Net Ton-Miles (Millions)

	Pre-War	1943	*Per cent. increase 1943 over pre-war*
Merchandise	5,192	9,659	86
Minerals	3,182	5,355	68
Coal, coke, and patent fuel ..	8,295	9,343	13
Total	16,669	24,357	46

11. *Length of Haul (Miles)*

	Pre-war	1943	Per cent. increase 1943 over pre-war
Merchandise	110	119	8
Minerals	69	87	26
Coal, coke, and patent fuel ..	46	60	30
All Freight	61	81	32

Wagon Miles

The increase in the length of haul is reflected in the wagon mile statistics. Table 12 gives the loaded wagon miles worked by the companies' engines, and shows an increase of 31 per cent. in the 1944 aggregate, as compared with the increase of 6 per cent. in originating tonnage. (Figures for 1940 are not available.)

12. *Loaded Wagon Miles (Millions)*

	Pre-War	1941	1942	1943	1944	Per cent. increase 1944 over pre-war
(a) Merchandise (including Livestock)						
G.W.R.	366	433	468	486	502	37
L.M.S.R.	813	959	1,043	1,089	1,126	38
L.N.E.R.	611	738	772	828	831	36
S.R.	98	103	119	134	145	49
Total	1,888	2,233	2,402	2,537	2,604	38
(b) Minerals and Merchandise						
G.W.R.	64	98	97	93	81	27
L.M.S.R.	141	213	219	204	185	32
L.N.E.R.	113	185	194	212	199	75
S.R.	16	20	22	24	24	50
Total	334	516	532	534	489	47
(c) Coal, Coke and Patent Fuel						
G.W.R.	155	175	160	147	148	—4*
L.M.S.R.	361	455	446	432	414	14
L.N.E.R.	322	408	391	357	366	14
S.R.	34	51	51	45	43	26
Total	872	1,089	1,048	981	971	11
			*decrease			
(d) Total Loaded						
G.W.R.	585	706	725	727	731	25
L.M.S.R.	1,315	1,627	1,708	1,725	1,725	31
L.N.E.R.	1,046	1,331	1,357	1,397	1,395	33
S.R.	148	174	192	203	212	43
Total	3,094	3,838	3,982	4,052	4,063	31

It will be noticed that the increase in the case of merchandise was evenly spread among the companies, whereas the L.N.E.R.

had a disproportionate advance in the wagon mileage for minerals and merchandise, its statistic in 1943 surpassing the L.M.S.R. result. Another feature is that 1941 stands out as a peak year for coal and coke wagon mileage. Before the war, empty wagon mileage was roughly one-half the loaded wagon mileage. In 1943 it represented only 34 per cent. of the loaded miles. Details of the variations in empty mileage are given in table 13, and the next table shows that the total wagon mileage, loaded and empty, in 1944 was 19 per cent. above pre-war.

13. *Empty Wagon Miles (Millions)*

	Pre-War	1941	1942	1943	1944	*Decrease per cent. 1944 from pre-war*
G.W.R.	265	218	208	218	221	17
L.M.S.R.	604	593	595	585	576	5
L.N.E.R.	580	572	547	523	551	5
S.R.	72	63	62	66	80	+12*
Total	1,520	1,446	1,412	1,392	1,428	6

*increase

14. *Total Wagon Miles, Loaded and Empty (Millions)*

	Pre-War	1941	1942	1943	1944	*Increase per cent. 1944 over pre-war*
G.W.R.	850	924	932	945	952	12
L.M.S.R.	1,919	2,220	2,303	2,309	2,301	20
L.N.E.R.	1,626	1,903	1,905	1,921	1,946	20
S.R.	219	237	255	269	292	33
Total	4,614	5,284	5,395	5,444	5,491	19

In 1943, the average wagon load for all classes of merchandise was 6 tons, an increase of about 10 cwts. on the pre-war load.

Freight Train Mileage

Continuing the comparison between 1944 and pre-war, table 15 reveals an increase of 11 per cent. in loaded freight train miles worked by the companies' engines, and an increase of 16 per cent. in the total freight train miles, loaded and empty. The increase of 51 per cent. in empty freight train miles is due to the exceptional requirements of wartime traffics. Empty wagon miles, as we have seen, were down by 6 per cent., but many train loads of empties had to be run for special purposes. Pre-war empty train miles represented 11 per cent. of the total. In 1944 that percentage rose to 14.

15. *Freight Train Miles (Hundreds of Thousands)*

	Pre-War	1940	1941	1942	1943	1944	Increase per cent. 1944 over pre-war
(a) Loaded							
G.W.R.	226	240	232	241	242	238	5
L.M.S.R.	502	557	543	565	566	554	10
L.N.E.R.	402	458	460	466	464	455	13
S.R.	68	77	74	79	83	88	28
Total ..	1,198	1,332	1,309	1,351	1,355	1,335	11
(b) Empty							
G.W.R.	21	29	28	27	30	33	56
L.M.S.R.	58	83	84	87	88	87	50
L.N.E.R.	62	87	87	85	81	90	45
S.R.	2	3	3	4	4	5	223
Total ..	143	202	202	203	203	215	51
(c) Total							
G.W.R.	247	269	260	268	271	271	10
L.M.S.R.	560	640	627	652	654	641	15
L.N.E.R.	464	545	547	551	546	545	17
S.R.	70	81	77	83	87	93	33
Total ..	1,341	1,535	1,511	1,554	1,558	1,550	16

Table 16 sets out the total coaching and freight train miles run by the companies' engines. The decrease in coaching train miles outweighs the increase in freight train miles, and we are left with a fall of 15 per cent. in the aggregate.

16. *Total Coaching and Freight Train Miles (Hundreds of Thousands)*

	Pre-War	1940	1941	1942	1943	1944	Decrease per cent. 1944 from pre-war
G.W.R.	677	602	598	603	607	602	11
L.M.S.R.	1,590	1,333	1,335	1,362	1,364	1,343	16
L.N.E.R.	1,203	1,065	1,072	1,077	1,078	1,069	11
S.R.	726	521	501	523	531	537	26
Total ..	4,196	3,521	3,506	3,565	3,580	3,551	15

The average number of wagons per train in 1943 was 35, of which 9 were empty. Before the war the average number was 34, but 11 of these were empty. The 1943 train load was about 179 tons, compared with 139 tons in the pre-war period, and 131 tons in the year 1937.

Table 17 shows that the number of hours spent in traffic by freight train engines increased by 48 per cent. in 1944 over pre-war. There was also an increase of 18 per cent. in the hours worked by freight shunting engines, and of no less than 70 per cent. in the hours occupied on other purposes. The total engine hours set out in

section (*c*) of the table show an increase of 34 per cent. Inevitably there was slower movement of freight under war conditions. The average speed of a freight train declined from 9·1 miles an hour pre-war to 7·3 miles an hour in 1943. The average number of freight train miles run per engine-hour decreased over the same period from 3·7 to 3·2.

17. *Freight Engine Hours in Traffic (Tens of Thousands)*

	Pre-War	1940	1941	1942	1943	1944	Increase per cent. 1944 over pre-war
(*a*) *Train engines*							
G.W.R.	261	370	386	381	363	379	45
L.M.S.R.	624	911	913	950	918	949	52
L.N.E.R.	505	711	720	723	743	729	44
S.R.	75	102	91	96	104	114	52
Total	1,465	2,094	2,110	2,150	2,128	2,171	48
(*b*) *Shunting engines*							
G.W.R.	411	466	465	478	488	493	20
L.M.S.R.	741	854	844	859	860	849	14
L.N.E.R.	606	676	678	683	708	707	17
S.R.	131	156	152	160	166	178	36
Total	1,889	2,152	2,139	2,180	2,222	2,227	18
(*c*) *Total hours (Freight engines used for all purposes)*							
G.W.R.	725	915	935	946	942	966	33
L.M.S.R.	1,480	1,933	1,927	1,987	1,961	1,989	34
L.N.E.R.	1,192	1,509	1,520	1,531	1,583	1,569	32
S.R.	220	285	265	278	293	320	45
Total	3,617	4,642	4,647	4,742	4,779	4,844	34

In 1944, departmental requirements kept engines in traffic for over 2,729,000 hours—an increase of 13 per cent. on the pre-war user. Table 18 shows that the aggregate engine hours needed to move coaching, freight, and departmental traffic were nearly 70,860,000 in 1944—a new peak, representing an advance of 13 per cent. on the pre-war figure of 62½ millions.

18. *Aggregate Engine Hours in Traffic (Coaching, Freight, and Departmental) (Tens of Thousands)*

	Pre-War	1940	1941	1942	1943	1944	Increase per cent. 1944 over pre-war
G.W.R.	1,141	1,297	1,332	1,344	1,340	1,365	20
L.M.S.R.	2,504	2,760	2,771	2,826	2,790	2,817	13
L.N.E.R.	1,948	2,151	2,173	2,180	2,238	2,226	14
S.R.	663	646	614	629	645	678	2
Total	6,256	6,854	6,890	6,979	7,013	7,086	13

This table ends the series which have been compiled to indicate the character of the railway war effort. The statistics would have

been impressive in any circumstances. They are all the more noteworthy when we recall that they are a measure of work done under extremely difficult conditions. The railways were handicapped by shortage of staff and materials, spells of unusually severe weather, and frequent changes in the transport arrangements planned by the Government departments. In spite of all these drawbacks, record traffics were handled with remarkable efficiency. The density of freight traffic in 1943 required the movement of something like 1,218,000 net ton-miles over an average route-mile during the twelve months. In 1937, a fairly busy year, the corresponding figure was 919,000, so that one-third more freight transport may be said to have been borne by every mile of railway. Perhaps it should be explained that in preparing all the operating statistics used in this review, particulars for joint lines having separate accounts, such as the Cheshire Lines, and the Somerset & Dorset, have been included in the returns for the parent companies.

Trend of Development in 1945

From the beginning of 1945, current statistics indicated that wartime traffic had passed its peak, though the decline in freight carryings was gradual, and passenger bookings, after decreasing to the end of April, took an upward trend, showing an increase of 1·8 per cent. for the six months ended June, as compared with the first half of 1944. Over the same periods, coaching train miles increased by 2 per cent., and coaching train engine hours in traffic were ·9 per cent. higher in the aggregate, though the L.M.S.R. figure was ·5 per cent. down. Coaching train miles per train hour were advanced to 14, reflecting a small improvement in passenger train speed on all four railways. When we turn to freight statistics, we find a persistent falling-off, tending to become more pronounced as the year advanced. Comparing, once more, the first six months of 1945 and 1944, the originating tonnage of all classes of freight declined by 5·9 per cent. The resultant decrease in net ton-miles was estimated at 4·8 per cent. Loaded wagon miles were fewer by 4·5 per cent., and empty wagon miles by almost 6 per cent. Both loaded and empty freight train miles dropped by 4·4 per cent. while freight engine hours in traffic decreased by 6·6 per cent. The average freight train speed of 8 miles an hour was somewhat better. By the month of August, 1945, net ton miles were running about 20 per cent. below the level reached twelve months before. They still stood 20 per cent. or so above the pre-war standard, but the abnormal wartime boom in railway freight carryings had come to an end.

CHAPTER 21

Wartime Features of Railway Civil Engineering

IN peace-time, the main-line railways spent about £21,000,000 a year on maintenance of way and works. They had 20,000 miles of road, embracing over 35,000 miles of single track, and 14,000 miles of sidings to keep in good order. Their practice was to renew about 1,400 miles of track a year, and their annual requirements of permanent way materials were at least 21,000 tons of rails, sleepers to the number of 4,250,000, and 1,700,000 cubic yards of ballast, with proportionate quantities of fishplates, chairs, keys, and other fittings. The civil engineers used a great variety of other materials for the upkeep of structures, bridges, and roads. They also had stores of valuable apparatus for signalling, telegraph, telephone, and electric track equipment. Over and above the railway expenditure, the cost of maintaining docks, including the important item of dredging, ran into the neighbourhood of £1,700,000 each year, and needed another reserve of specialised materials at the ports.

Stocks of Materials and use of Substitutes

Speaking broadly, the stock position at the end of August, 1939, was fairly strong, and in the early stages of the war the construction of wartime facilities was offset by the deferment of large works authorised in the days of peace, and by some reduction in the standards of maintenance. Soon, however, there came a change, owing to such happenings as the loss of imported material through the U-boat campaign, the repair of air-raid damage, and a growing list of orders for emergency works. The stores superintendents had great difficulty in obtaining adequate supplies of practically all essential materials requisitioned by the engineering departments. The permanent way material allotted to the companies was not sufficient for normal re-laying programmes, and pre-war practice was modified to make the best use of the quantity available. Some of the rails laid down were imported from the United States, but old rails were put back on new sleepers to a greater extent than before. The import of Baltic pine

sleepers ceased, and shipments of Douglas fir from Canada were on a greatly reduced scale. Consequently, sleepers cut from fir and other home grown timber were used in large numbers, while concrete sleepers and blocks were used in sidings. Experiments were made with concrete sleepers in running lines, but results have so far not justified their adoption to any large extent. The reclamation of switches, crossings, and chair fastenings was developed successfully. Indeed, nothing was sent to the scrap heap that had any useful life in it. More than usual care was taken in the civil engineering and other using departments to collect scrap of all sorts. This wartime drive enabled the railways in one year to despatch to the manufacturers 300,000 tons of iron and steel scrap in exchange for the allocation of 675,000 tons of new material.

The scanty supplies of timber, and their stringent control, quickly affected structural work. Steel, paint, and rubber were also controlled so tightly that the engineers were driven to use substitutes, and to adopt alternative methods of design. Any timber used was reduced to the smallest possible size. Timber floors and door and window frames were replaced by concrete, brickwork, and metal frames. Though cement was controlled at one period, the pre-war trend towards the wide use of reinforced concrete was intensified. Beams, slabs, posts, and other reinforced units were employed for work which would have been done previously in timber or steel. The re-roofing of several motive power depots was carried out in reinforced concrete, even to the glazing bars, and in some cases glass was fitted direct to brickwork.

Considerable use was made of asbestos sheets, as a substitute for roof boarding, asbestos cement tubes for principals, rafters, and purlins, as well as asbestos cement goods for cupboards, shelves and internal partitions. Owing to the shortage of zinc, it was impossible to obtain galvanised piping and corrugated iron sheets. Black roofing and side sheets of a smaller gauge than would normally be used were employed. Black iron pipe was used for water services, with the result that, in many cases, the pipes had to be relaid as soon as it was possible to obtain galvanised articles. For a time, linseed oil was scarce, and substitutes were used in the manufacture of paint. Owing to the shortage and control of paint, all decorative painting was cut out and attention concentrated on the preservation of important structures. On station buildings, patch painting of one coat was carried out when it became necessary and water paint or distemper was used on interiors. Tar was used largely instead of paint for rougher classes of protective work.

Materials and Labour for Emergency Works

In view of the depletion of their own stocks, it would have been impossible for the railways to provide the additional facilities for wartime traffic described in chapter 17 unless the Ministries of War Transport and Supply had arranged to release the necessary materials. The practice was for the engineer responsible for carrying out a particular work to send an estimate of the quantities of its principal components to the Ministry of War Transport, which then adjusted any question of priority of delivery with the Ministry of Supply. Similarly, the engineer stated the amount of outside labour needed for the work and the Ministry of War Transport asked the Minister of Labour & National Service to find the specified manpower. In view of the extensive nature of many of these works, it is remarkable that materials and labour were forthcoming in sufficient quantities to avoid any serious delays in completing the schemes.

Separate mention should be made of rail connections for Government establishments, because they were numerous enough to necessitate a considerable amount of planning by the engineering staff. In the last two years of precarious peace, Government departments were engaged on plans for munition and aircraft factories, oil refineries, and depots of many kinds, which would be wanted if war came. One of the principal considerations in selecting sites for these establishments was the adequacy of the transport services which could readily be furnished. In the majority of cases, the Government relied upon the railways to move the bulk of the traffic, and the companies were fequently consulted about siding connections, and the layout for distributing loaded and empty wagons within the depot boundaries. After September, 1939, these applications for private siding facilities naturally multiplied in number The Fighting Services urged forward many schemes. Pressing demands also came from the Ministries concerned with production and food supplies. The peace-time procedure for dealing with requests from traders for private sidings was modified to suit the exigencies of Government business, and rail access was arranged to the selected sites without loss of time over formalities. As a rule, the Railway Engineers carried out the work on the companies' land, while the Government employed either the Royal Engineers or private contractors to complete the internal siding layout. A few of the larger schemes involved the construction of some miles of private railway, fully signalled, and equipped with passenger halts, and goods warehouses, on Government property. In some instances, stations adjoining large depots were extended and subsidiary works were carried out on

adjacent running lines, including extensive signalling alterations. The table below shows the number of siding connections installed for the Government by the main-line railways, and may convey some idea of the amount of attention which their traffic officers and engineers had to give to these exceptional wartime requirements :—

Number of siding connections installed for the Government

	1939	1940	1941	1942	1943	1944	*Total*
G.W.R.	1	14	52	55	53	50	225
L.M.S.R.	16	69	115	169	116	57	542
L.N.E.R.	15	25	29	62	48	46	225
S.R.	—	13	69	29	52	30	193
Total	32	121	265	315	269	183	1,185

Repair of War Damage

The chapter on air-raid precautions explained that before the outbreak of war the civil engineers studied the possible effects of bombing, and devised methods for keeping railway communications open. The first consideration was the prompt repair of permanent way and bridges. Each of the railways arranged to establish stocks of permanent way material for various layouts, together with spare plant and gear, at strategic points. Bridging material for complete superstructures of varying spans was accumulated. Baulk timber, steel trestling, and steel sheet-piling were included in the stocks, while cranes, excavators, oxyacetylene burning plant, and other appliances were also at hand. The sites for these emergency reserves were selected with an eye to their geographical position, and to their capacity for dispatching materials and plant quickly to the scene of trouble. At some of the depots, emergency repair trains were fitted up and held in readiness. Their make-up included gas tanks, water tenders, messing coaches, and passenger vehicles, to accommodate as many as 90 men with an ample supply of tools. These trains were provided to overcome the difficulty of maintaining large gangs of men at points on the line where lodgings could not be found.

Special measures were taken at danger points to limit flood damage due to enemy action to canals and docks. After the withdrawal of the British Forces from France, the Southern Railway arranged for permanent way staff to patrol the lines in Kent, Surrey, Sussex and Hants, as far west as Salisbury and Poole. The object of the patrol was to guard against the descent of paratroops, and it was kept up by day and night until the Local Defence Volunteers took over the watch and ward in the middle of June, 1940.

As a result of all this thorough planning and preparation, the Civil Engineers were able to meet the menace of air attacks with confidence in their own resources and were never at a loss, even when damage assumed an unexpected form. There were relatively few cases of lines being out of use for more than a few days. Indeed, limited working was generally put into force within 24 hours. When extensive damage did delay the resumption of traffic working for some time, co-operation between the operating and engineering departments devised some means of providing alternative facilities. Of the thousands of air raid incidents reported between May, 1940, and May, 1945, the great majority concerned damage to the track, and repairs were effected quickly. It was not so easy to restore structures, bridges, and tunnels. Two cases have been chosen from the list of incidents on each of the main line railways to show the variety of problems which the Engineers were called upon to solve after the raiders had passed.

Retaining Wall at Twerton, near Bath, G.W.R.

At Twerton, near Bath, the line was hit in nine places in two raids on successive nights. The most serious damage was to a retaining wall, about 30 ft. high, carrying the line alongside an important main road, which received a direct hit. About 100 ft. of the wall was demolished, and a total length of about 150 ft. was affected, both lines being put out of use, the up line for a length of about 100 ft. being unsupported, and the down main line undermined.

To restore the railway, the down main line was supported by longitudinal timbers, and quickly re-opened to traffic. A cross-over road was inserted between the up and down lines at each side of the breach, so that traffic could be worked with a short length of single line. A temporary bridge, to carry the up line, was constructed by driving timber piles, and this work was carried out be means of a 15-ton crane, which was specially equipped with pile-driving leaders, and a steam hammer. Steel sheet-piling was driven behind the wall, so that the length destroyed could be rebuilt.

Bridge at East Acton, G.W.R.

A bridge at East Acton, which carries the Central London Railway, and two goods lines running parallel to it, was hit by a high explosive bomb, as the result of which a corner of the abutment carrying the outside girder of the up goods line was shattered, and the end of the girder bent right back for about 16 ft. The

permanent way of both goods lines was badly damaged and the electric lines put out of use by materials being thrown on to them. Standard light type steel trestling was erected in the roadway to support the centre, and outer girders, and a temporary bridge provided to carry the track.

Exchange Station Viaduct, Liverpool, L.M.S.R.

On December 20, 1940, a high explosive bomb destroyed three arches and two piers of the brick viaduct which carries two steam and two electric lines into Exchange Station, Liverpool. The first need was to prevent the adjoining arches from collapsing, so heavy raking shores were fixed against the supporting piers. After the two destroyed piers had been rebuilt, horizontal strutting was fixed throughout the series of five spans—the three destroyed arches, and one on each side. As a further safeguard, the arch on each side of the gap was also centred with heavy timbers 5 ft. apart. Stop piers and relieving arches were built within the spans next but one to the gap.

In order to re-open the west (electric) lines, a temporary superstructure of steel joists carrying sleepered roads was constructed, supported from the new piers by brick pillars. In designing the temporary bridge, allowance was made for rebuilding the permanent structure without interference to traffic. Work was proceeding on this when, on May 3, 1941, a second bombing attack destroyed most of the work already done. One bomb fell on the south side of the second arch at one end of the gap, and but for the presence of the stop pier, the damage would have been serious. The former temporary work under the west lines was quickly restored, and the reconstruction of the viaduct under the east lines was completed without resorting to a temporary superstructure. The west (electric) lines were re-opened on July 6, 1941, and the east (steam) lines on April 12, 1942.

St. Pancras Station, London, L.M.S.R.

On the night of May 10, 1941, five bombs fell on St. Pancras Station. One formed a large camouflet, and the cavity under the tracks had to be bridged with 50 ft. temporary steel joists, and the platform carried on a 33 ft. steel beam. The most serious damage was caused by a bomb of 1,000 lb., which fell at the concourse end of Nos. 3 and 4 platforms. It penetrated the station floor (consisting of wrought iron plates on wrought iron main and cross girders, and cast iron columns), passed right through the basement, and exploded about 25ft. down in the solid clay, at the back of

the side wall of the Kings Cross Tunnel under the station. A large crater was formed in the basement floor. About half the tunnel lining for a length of about 20 ft. was destroyed, and the tunnel completely blocked with debris.

The first step towards repairing the damage was to make a thorough examination of all the cast iron columns in the basement. It was then possible to decide the area of the station floor which was unsafe, and this was barricaded off. A ballast train was placed in the tunnel and the loading of clay and debris was commenced, but could not proceed very far at first, owing to the fact that there were a number of portions of damaged rolling stock and sections of columns, plates, and girders overhanging the crater. Little progress was possible until an unexploded bomb further up No. 2 platform had been removed, allowing the damaged rolling stock to be dealt with.

One line in the tunnel was then uncovered, and the debris was loaded into a ballast train on this line. The tunnel is very tight to gauge, and it was found impossible to maintain a double line in it, and allow room for the necessary centering. The tracks were therefore interlaced, and the tunnel re-opened to traffic, which was entirely freight.

Centerings of scrap rails, laid sideways, each made in four parts, jointed by fishplates, and braced with flat steel straps, were erected, and the damaged brickwork of the tunnel rebuilt. The station floor was restored with steel girders and precast concrete units. On May 17 traffic was resumed on all lines, except at Nos. 2 and 3 platforms, which were not re-opened until June 7.

Marylebone—St. John's Wood Tunnel, London, L.N.E.R.

During an air-raid on the night of September 26, 1940, a high explosive bomb penetrated the ground to a considerable depth, and exploded close to the side wall of the tunnel, demolishing approximately 35 yds. of the roof and blocking the Marylebone main lines. During a subsequent air-raid on October 1, 1940, another high explosive bomb fell at a point only ¼-mile from the previous impact, and, penetrating the ground to a depth of 22 ft. in the garden of St. John's & St. Elizabeth's Hospital, exploded on contact with the crown of the brick arch of the tunnel.

In order to investigate the extent of the damage, a 40 ft. square timber lined shaft was sunk. When the loose debris was removed, it was found that a 35 ft. length of the tunnel had been demolished. In order to deal with passenger traffic, the L.N.E.R. trains were terminated at Neasden, and a temporary timber

platform was quickly constructed there. This arrangement gave interchange facilities with the L.P.T.B. Metropolitan Line at Neasden Station. The rebuilding of the damaged lengths of tunnel was undertaken immediately, with the result that trains were again able to work into Marylebone on November 26, 1940, by interlacing the up and down main lines. The extent of the damage was so great, however, that the final repairs were not completed until August, 1941.

Grove Road Bridge, Coborn Road, L.N.E.R.

At about 4.30 a.m. on June 13, 1944, a large missile hit this underbridge and exploded, demolishing the part of the bridge carrying the local lines, and seriously damaging the remaining part, which carried the main lines. The missile was one of the first pilotless aircraft, or flying bombs, launched against this country. By 7.45 p.m. on June 14, a temporary bridge, consisting of steel joists, supported by timber trestles, was completed to carry the local lines. A temporary bridge of similar type was also constructed to carry the main lines, and this was completed at 4.45 p.m. on June 16, full rail facilities being restored soon afterwards. The roadway under the bridge was re-opened to traffic, which included a trolleybus system, early on the morning of June 17.

Southwark Street Bridge, Blackfriars, London, S.R.

Shortly before midnight on April 19, 1941, a parachute mine struck and demolished the 100 ft. span steel girder bridge carrying four running lines and four sidings over Southwark Street, Blackfriars. This bridge is on a busy electrified route linking Holborn Viaduct Station with the south-east suburbs. It was, therefore, necessary to effect temporary repairs with the least possible delay. As the mine struck the bridge almost centrally, most of the girderwork collapsed on to the roadway below, and these heavy girders had to be removed before two military trestles, to carry temporary waybeams, could be erected. However, a temporary bridge was erected rapidly, and the main tracks were re-opened in stages between May 1 and June 29, 1941. Permanent reconstruction of the bridge was undertaken in January, 1942, and completed in December of the same year.

Brighton Viaduct, S.R.

During an attack by enemy aircraft, which occurred about midday on May 25, 1943, in the Brighton area, one group of planes attacked the station premises and the adjacent viaduct. One of

the bombs ploughed through the asbestos roof of a low building, dived through a flint wall, bounced on a road surface, passed through the front bay and out of the back of a house on the opposite side of the road, entered an upper storey workshop, and, on passing through this building, encountered a pier supporting the London Road Viaduct, which it chipped as it bounced off and exploded on hitting the next pier, This pier was shattered, and the two arches it supported crashed down about 80 ft. to the ground below, leaving the tracks suspended intact over a gap some 60 ft. wide. The ornamental parapet also remained suspended for several hours, and then crashed down. The work of temporary reconstruction was commenced the next day, as all rail connection between Brighton and the towns to the east was severed. Military trestles were erected, and tie rods were placed between the adjacent arches, while rolled steel joists were placed across the gap to carry the tracks. This temporary work was completed on June 29, 1943. The demolished pier, and the two arches sprung therefrom, were then completely reconstructed within four months from the date of the incident.

Cost of Repairing War Damage

A complete assessment of war damage suffered by the main-line and L.P.T.B. railways will involve a long and complicated enquiry. After allowance has been made for the expired life of destroyed assets, a conservative estimate of £30,000,000 may be short of the sum needed to make good losses directly attributable to aerial warfare, especially if prices of labour and material should rise. The greatest amount of damage was done on the L.N.E.R. system, but the S.R. has so many structures to rebuild that in the aggregate it will spend more money than the L.M.S.R., and possibly three times as much as the G.W.R. The destruction of L.P.T.B. property was serious in relation to the size of the railway undertaking, and the board's repair bill may be nearly double the cost of renovations on the Great Western, as most of the territory of the latter was comparatively free from hostile attacks.

CHAPTER 22

Adaptation of Rolling Stock to War Purposes

ON the outbreak of war, the building of new coaching stock was suspended and the railway workshops were devoted to fresh tasks created by the emergency. In April, 1939, the Home Office took the lead in conferring with the Ministry of Transport, the War Office, and the railways on the question of preparing casualty evacuation trains for the removal of people injured in air attacks, which the Government expected to occur as soon as war was declared. It was thought that 34 trains, each formed of 10 corridor vans and 2 brake vans, would be required for the conveyance of stretcher cases. As the railways wished to keep the luggage vans in traffic until the emergency arose, it was necessary to devise a bracket for carrying stretchers, which could be fitted in the vehicles when required. While the vans remained in service, the brackets were stored, as a rule, in boxes on the underframes. The brake vans were fitted with shelves and cupboards for medical stores. In all, 564 vehicles were converted—72 at Swindon, 274 at Derby and Wolverton, 150 at Doncaster, York, and Stratford, and 68 at Eastleigh and Lancing.

On September 4, 1939, the whole of the casualty evacuation trains were assembled, and stationed at convenient points near large centres of population. Resident medical staffs were assigned to the trains, which were controlled by the Ministry of Health. Actually, the trains were only used for the transfer of civilian hospital cases from vulnerable areas to safe quarters and, to a small extent, for Service casualties. Their provision was a prudent measure on the part of the authorities, but the withdrawal of 500 corridor vans at the beginning of the war caused some difficulty to the railways in handling parcels and newspaper traffic. In December, 1941, the Ministry of Health decided to relinquish 14 trains, and some of the vehicles were modified for use in the ambulance units described in the next paragraphs.

Some time before the storm broke, plans had been laid, in consultation with the War Office, for fitting out 12 ambulance trains, 8 for use in this country, and 4 for use overseas. The L.M.S.R. prepared detailed drawings, selected suitable vehicles from its own stock, and assembled essential fittings at Derby. On September 2, 1939, the order came to go ahead with the work. The vehicles

and equipment were at once despatched to the carriage shops of the four railway companies, and, in less than three weeks, 2 home and 4 overseas trains were completed and handed over to the military authorities. At first each home train consisted of 9 vehicles of 7 types; later two more vehicles were added. The train had accommodation for resident doctors and nurses; ward cars for stretcher, sitting, and mental cases; a kitchen car; and space for medical stores. There were 16 vehicles of 9 types in each overseas train, which were provided with couplings and drawgear of Continental pattern, and with steam couplings suitable for connecting with French locomotives. When, in October, 1939, it became clear that a large number of additional trains would be required, the Ambulance Trains Committee was constituted from representatives of the Services, the Ministry of War Transport, and the railways. This committee made all subsequent arrangements for the supply of more trains, and the maintenance of the rolling stock, with the L.M.S.R. acting as the link between the Government departments, the R.E.C., and the railways.

By the spring of 1940, the railways had prepared 25 trains in all—12 for home and 13 for overseas service—involving the conversion of 344 L.M.S.R. vehicles. Nine of the overseas trains, made up of 144 coaches, were lost in France. The four remaining trains were stabled until the tide of battle turned, and they were wanted abroad. The call came in August, 1942, and at the same time 23 more trains were requisitioned for use overseas by the Allied Forces. The number of ward cars on a train was reduced by two and each railway proceeded to convert its own vehicles. Later orders for identical units brought the total number of ambulance trains to 66. Altogether, 925 British railway vehicles were converted—154 at Swindon, 343 at Derby and Wolverton, 290 at Doncaster and York, and 138 at Eastleigh and Lancing. In addition, 25 vehicles were provided as independent ambulance coaches, which could be attached to any train for the movement of small numbers of patients. Each of the four railways also took a share in transforming 10 French ferry vans into boiler cars for use with ambulance trains, and 80 battery charging sets were provided. The engines and generators for these sets were supplied by outside firms and mounted on mobile trolleys at Derby Carriage & Wagon Works.

When D-Day came in June, 1944, 32 ambulance trains were ready for the British Army and 34 for the American Forces. In the early days of the invasion of Normandy, the movement of U.S.A. casualties brought back to this country was arranged by using five of the British trains and ten of the U.S.A. trains, which

were being held for shipment to the Continent later. The U.S.A. trains were equipped with the Westinghouse brake, and ten engines fitted with that type of brake were transferred from the L.N.E.R. to work them exclusively. Two sets of L.N.E.R. drivers, firemen, fitters, and guards accompanied each engine and lived with the Americans on the ambulance trains. When the shipment of overseas trains to France began, two extra trains, fitted with the vacuum brake, were supplied to the American authorities for use in this country. The shipment was completed in December, 1944, and in February, 1945, six more trains were assigned to the U.S.A. Army for home use. It is noteworthy that from D-Day, June 6, 1944, until V-E Day, May 8, 1945, over 1,800 journeys were made by ambulance trains in Great Britain.

In February, 1945, an urgent request was received from S.H.A.E.F. for 12 passenger trains, each of 15 bogie coaches, to be sent to France for important troop movements. The practice of using French covered vans for carrying troops was hindering the conveyance of supplies and foodstuffs for the civilian population. At that time our railways were short of coaching stock, but the L.M.S.R. furnished 5 trains, the L.N.E.R. 4, the G.W.R. 2, and the S.R. 1. The first train went to France within a fortnight, and the shipment of the 12 trains was completed by May 10. All the coaches were fitted with steam heating and electric light. They were passed through the shops for overhaul before shipment, but their brakes were not altered, as locomotives fitted with vacuum brakes were used for working these troop trains. In July, 1945, the railways supplied 10 more passenger train sets, each consisting of 14 vehicles of bogie stock, for use on overland routes between the Mediterranean and the Channel Ports. The L.M.S.R. and L.N.E.R. both parted with 3 trains, the G.W.R. sent 2, and the S.R. 1. The Government was advised that the withdrawal of so many vehicles, at a time when 25 per cent. of the passenger rolling stock needed repairs, would add substantially to the difficulties of catering for holiday traffiic in this country ; but it decided that the transfer was necessary to enable the War Office to carry out its plans for giving leave to troops serving overseas. These incidents are recorded out of chronological order to show how pressing calls on the resources of the railways continued right to the end of hostilities. Some of the more important work performed by the mechanical engineering departments at earlier stages of the war will now be described.

The Great Western Railway prepared, and stabled at Swindon, a 14-coach ambulance train for a U.S.A. medical unit, as well as providing 4 coaches and 2 storage vans for the accommodation

of an American Ambulance train maintenance unit. Similar provision was made for an ambulance maintenance section of the Royal Engineers, and four coaches were furnished for their No. 1 Railway Workshop Company. Nine coaches were also got ready at Swindon for two Light A.A. Batteries and four long troop trains were prepared for overseas. The L.M.S.R. despatched 75 coaches to France, and the L.N.E.R. 60, fitted with brackets to secure them during shipment, but there was refreshing novelty about the work performed by the former company in constructing 16 breakdown trains for the War Office. Each train was a self-contained unit, consisting of 4 vehicles, and attached to 12 of the trains was a steam crane, so that they could tackle most emergency work likely to arise in wartime. The vehicles converted for this purpose were French or Italian covered wagons, which in pre-war days ran in the Continental ferry services. Another interesting conversion, carried out at Derby, gave the military authorities 12 armoured trains, each consisting of 2 open wagons for carrying accessories and 2 steel 20-ton locomotive coal wagons. The sides and ends of the 20-tonners were reinforced with 4 inches of concrete, attached to the outside, and covered with steel plate about half an inch thick. A 6-pdr. Hotchkiss gun was mounted on a pedestal at the end of each of these wagons, of which the sides and ends adjacent to the gun were reduced to permit a wide arc of fire. The other end of the wagon was fitted with 4 Bren guns, with a bridge-head partition erected near the middle of the wagon, to give protection to the Bren gunners. Finally, 12 locomotive tenders were protected by armour before being included in the trains.

It will be gathered from the chapters dealing with freight rolling stock and train working that the railway workshops were busily engaged, from time to time, in adapting various types of vehicles for special purposes originated by wartime changes in traffic. Particulars of these alterations to wagon stock need hardly be repeated here. Neither does it seem appropriate to record the fitting out of passenger coaches or vans for such objects as anti-gas training, or the housing of Home Guard contingents. On the other hand, the assembly by the Southern Railway of 1,600 open goods wagons for shipment to Persia deserves special mention, if only as an example of co-operation between the railways. The L.M.S.R. supplied for this work 800 pairs of wheels and axleboxes, 2,000 axleboxes, 500 three-link couplings and as many bearing springs, 210 sets of timber sheeting and flooring and many small fitments, while the L.N.E.R. also transferred a large quantity of material from its Darlington shops to the S.R. wagon works. In November, 1940, another curious piece of work was carried out at Earlestown,

where the L.M.S.R. broke down 400 twenty-ton covered goods wagons of French design, and packed the parts for shipment to Turkey. At the same time, a small consignment of 88 wagons was shipped to Egypt.

The L.M.S.R. had a unique link with overseas railways—this time with America. At the outbreak of war, the coaches of the *Coronation Scot,* which had been sent across the Atlantic for exhibition, were still in the States. Shipping space could not be spared to bring them home. The L.M.S.R. therefore agreed to place these splendid vehicles at the disposal of the American Government for the use of U.S. Army officers. The British railways made another gesture of goodwill to our Allies in July, 1942, by providing a special train for the U.S.A. Headquarters Staff in this country. For reasons of security, this train was known in railway circles by the code name of "Alive." The Great Western completed it at Swindon, and the formation quoted below shows that it contained all the facilities of a travelling office and hotel :—

FORMATION OF "ALIVE"

Two covered carriage trucks ("Monsters") 483 and 485 (for baggage and motorcars) ;

Utility van, with boiler and generator (for heating and lighting when train was stationary) ;

Corridor brake third (for staff and stores) ;

Corridor third (staff car), armour plated ;

Restaurant car ;

Saloon (conference car) ;

Two sleeping cars for officers ;

Corridor brake third (for staff and stores) ;

L.N.E.R. first class sleeper, called *Bayonet* (4 of the berths converted to form a saloon) ;

Corridor third, converted with 32 sleeping berths ;

Six covered carriage trucks ("Monsters") Nos. 585, 588, 590, 592, 593, and 594 (for baggage and motorcars).

Much attention was paid to the comfort of the sleeping car *Bayonet,* which was fitted out by the L.N.E.R. at Doncaster. The original car was replaced in course of time by another vehicle of the same type and internal layout, but armour plated over the whole of its exterior. At the end of the European war, General Eisenhower assured the railway companies that the train had been of great assistance to him in carrying out his duties as Commander-in-Chief of the American Forces in Europe.

At Doncaster Works, the L.N.E.R. made up a train of simpler structure, with the code name of *Rapier,* for the Commander-in-Chief, Home Forces. Its usual make-up consisted of nine vehicles, as follows :—

FORMATION OF " RAPIER "

First brake;
First saloon ;
Third restaurant car (one saloon converted to office) ;
First sleeper (bath fitted in shower compartment) ;
Composite sleeper ;
First brake ;
Two L.M.S.R. covered carriage trucks ;
Charging van.

For both *Alive* and *Rapier* the American or British Services found cooks and attendants, some of whom were members of the A.T.S. When planning a journey, the railways chose suitable sites for stabling these specials, so that the Commanding Officers could fulfil engagements in any part of the country they chose to visit, hold conferences on board the trains, and be sure of a good night's rest.

Railway coaches suitable for use as temporary living accommodation of a simpler type were lent to various Government departments. The L.P.T.B., for example, fitted out for the Ministry of Fuel & Power 10 open saloon coaches to give rest, dining and sleeping accommodation for 80 miners and 13 train staff. Kitchen ranges were installed for cooking, and lavatories were contructed, together with chairs, tables, and bunks. As the coaches were equipped with central draw and buffer gear, 4 dual-fitted match-wagons were provided, so that the coaches, which were marshalled into two trains, could be coupled to main-line rolling stock for movement from one place to another. London Transport also converted 3 Metropolitan trailer coaches into living quarters for officers in charge of rail-mounted artillery, 5 more vehicles into offices for the War Department, and another 6 for the use of the Admiralty, while, at various parts of the Southern Command, over 100 L.P.T.B. coach bodies served as hutments.

Between 1939 and 1944, the main-line railways spent £1,858,000 in meeting Government requirements for rolling stock. This expenditure was shared in the following way :—

	£
G.W.R.	248,000
L.M.S.R.	706,000
L.N.E.R.	98,000
S.R.	806,000
Total ..	£1,858,000

CHAPTER 23

Government Work performed in Railway Workshops

BEFORE the amalgamation of 1923, it was the established practice of the railway companies to build the bulk of their locomotives, carriages, and wagons in their own workshops. When Grouping came about, some of the small shops were either closed or restricted to repair work, and new construction was concentrated at a limited number of the larger establishments. Then followed a gradual process of overhauling the methods of building and repairing rolling stock. Pioneer work on progressive planned systems was successfully undertaken, while much new plant, including modern machine tools and woodworking machinery, was introduced, with great advantage to output, whether the shops were engaged on new construction or on repairs. When the country began to re-arm, the Government was anxious to make use of the companies' equipment and of the accumulated experience of their staff by applying methods, which had proved effective for railway work, to the production of instruments of war. Arrangements were made for the Chief Mechanical Engineers to go into the needs of the Service Departments with a suggestion that, in making contracts, attention might be paid to work which might not appear, at first sight, to lend itself to mass production. Authority was also given to enter into sub-contracts for any work which was causing a bottleneck in production by outside firms. In quick time the railway workshops were turning out a remarkable assortment of articles ranging from tanks, boats, sections of aircraft, and gun carriages, to periscope parts, drop stampings, and ring forgings. As a typical example of what was done, over 30 per cent. of the output of one general machine shop was in the form of war work of one kind or another. The shop in question contained £220,000 worth of machinery. Many of the machines were treble shifted, over 20 per cent. of the operators being women, who worked on night as well as on day shifts. At a few places the railways were able to lend complete shops, either to Government departments or to contractors employed by the Ministries concerned with production and supply. Further assistance was rendered by transferring skilled railway workers to firms who were short of experienced men. In these different ways the railways were instrumental in adding substantially to the manufacture of war material, but left themselves little reserve of workshop capacity for the adequate maintenance of

their own equipment, which soon began to suffer from the excessive wear and tear inseparable from railway operating during a world-wide war. A general description of the products of the railway workshops follows under distinctive headings.

Aircraft and Radiolocation

The railway companies did not attempt to produce complete aircraft, but wings, fuselage sections, ailerons, and a variety of component parts were manufactured in large quantities. As early as 1938, the Eastleigh Works of the Southern Railway undertook to make 1,475 conversion sets, to enable Blenheim bombers to be operated as fighter aircraft. The L.M.S.R. was a pioneer in dealing with aeroplane wings. One of its Derby shops was laid out for the purpose, and achieved the scheduled output of 10 pairs a week in July, 1940. Two years later that output was doubled, and altogether the shop produced 2,878 pairs. Derby shops also completed 1,000 pairs of Typhoon wings, 208 pairs of Tempest wings and 144 spares for Roc aircraft. The L.M.S.R. and L.N.E.R. formed with Cravens Limited, and Wolseley Motors Limited a group for the production of outer mainplanes and detachable bays for Horsa gliders. As its share of the contract, the L.M.S.R. made 160 pairs at Wolverton, while the L.N.E.R. carried out its portion at Doncaster and York. The total number of parts for aeroplanes manufactured at these L.N.E.R. shops, and at Cowlairs, Glasgow, was about 300,000.

The Derby works were busily engaged with repairs to bombers. A Hampden Repair Organisation was set up, with Mr. C. E. Fairburn as Controller, and directed the repairs to that type of aircraft by the L.M.S.R., the Brush and Willowbrook Coach Works, Loughborough, with Tollerton Aircraft Services, Nottingham, acted as assembly contractor. The supply of spares for the whole group was governed from Derby, where 2,600,000 parts were turned out. These arrangements expedited repairs to the Hampden bomber, and, in addition, Lancasters were repaired at Derby, where both the carriage and wagon shops and the locomotive shops took a hand in remedying over 4,000 items of serious damage to that class of bomber. Spitfires to the number of 150 were repaired at Barassie wagon shop, 60 Whitley bombers at Wolverton, and over 1,000 pairs of damaged aircraft wings were handled at Derby and Wolverton. The L.M.S.R. applied the "reduce to produce" principle to the whole of this class of work. When aircraft could not be renovated economically, the machines were stripped ; parts worth reconditioning were recovered, and parts beyond repair were sent to a reclamation depot.

The Great Western Railway machined and assembled nearly 60,000 high explosive bombs, ranging in size from 250 lb. to 4,000 lb., at Swindon, Caerphilly, Newton Abbot, Oswestry, Tyseley, and Worcester. The largest types of bombs were developed at Swindon in conjuction with the Ministry of Aircraft Production, and, in addition to turning out complete bombs ready for filling, over 13,000 nose pressings were supplied to other manufacturers to help them to get into production. One quarter of a million of bomb components were manufactured at the works mentioned above, or at Swansea, Neath, Danygraig, and Slough. Oilcocks for aircraft retractable undercarriages were produced at Swindon to the number of 4,700 and the locomotive works there also manufactured from duralamin forgings, supplied by a contractor, more than 300 latch pin attachments for carrier-borne Firefly aircraft. Swindon was for a considerable time the only source of supply of these complicated articles.

The Southern Railway equipped a shop at Eastleigh, and another at Lancing, for the construction of tail units of Horsa gliders, and produced 200 of them. For the manufacture of outer wings and ailerons for the same famous glider, the L.N.E.R. made ready shops at York and Doncaster. All these component parts were sent from the railway shops to an outside factory for assembly. Eastleigh also made 2,000 tail units, fitted with gyroscopic control, for determining the flight of aerial torpedoes, produced 44 sets of Sabre engine test beds and, along with the Ashford works, turned out various types of bomb trolleys and cradles.

As still further examples of assistance given to aircraft production, the L.N.E.R. forged 200,000 bearing shells for Rolls-Royce aero-engine connecting rods at Cowlairs, and 150,000 magnet cases and covers at Doncaster, while the Gorton Works produced 140,000 petrol cocks for aeroplane engines. The Great Western machined over 1,600 petrol pump bodies for aircraft bowsors at Swindon, and the locomotive works there took a hand in advancing radiolocation when seven experimental sets, and spares for 83 items, were developed and manufactured in co-operation with the Ministry of Aircraft Production. The L.M.S.R. responded to an urgent call for 240 receiver and 250 transmitter cabins by producing them quickly through the joint efforts of the carriage and wagon works at Derby and Wolverton. This is just one example of many rapid adjustments to new demands in the course of dealing with aircraft and radiolocation orders. At short notice a factory might change over from Botha and Swordfish wings to sections for Sunderland boats or Lancaster bombers.

Tanks and Armoured Fighting Vehicles

The L.M.S.R. achieved a noteworthy record by manufacturing 642 complete tanks at Horwich and Crewe. Horwich locomotive works were adapted for the purpose by installing over £70,000 worth of new machinery, and 481 tanks of the Cruiser, Centaur, and Matilda types were turned out there. Crewe works produced 161 Covenanter tanks to the company's own designs, which involved the preparation of 5,000 drawings and 70,000 prints. When the original design was modified, 150 of these tanks were adjusted at Crewe, and the L.M.S.R. acted as parent firm to several contractors engaged in building Covenanters. A large quantity of spares was manufactured at Crewe, Derby, and St. Rollox, Glasgow. Some of these spares were complicated pieces of mechanism, such as the Rackham clutch and the final drive. Fully 200 sets of turrets were machined and assembled at Derby, and machinery there, as well as at Crewe, was kept busily at work on turret shields and rings, transverse gear rings, plates, and other tank parts. The experience of the L.M.S.R. was that it took nearly as long to build a tank as it did to construct a locomotive.

The G.W.R., S.R., and L.P.T.B. joined in a co-operative scheme for producing components to increase the assembly of tanks by the L.M.S.R., but the Ministry of Supply decided to take all the Swindon output in the form of spare parts, which ran to 156,000 in number. The Southern Railway, however, produced over 250 steering clutch drums and more than 250 Rackham clutch drums at Brighton works. From Eastleigh, 36,000 tank details were turned out, and an important piece of work done there was the manufacture of about 100 Scissors Bridge Layer Equipments, to be fitted to various types of tanks in place of the turret. Lancing constructed 200 tank locating gauges which were delivered to Army depots.

The L.N.E.R. machined and assembled 350 two-man and three-man turrets at Gorton and Cowlairs; 1,700 turret ball and race rings were machined at these works and 54,000 tank track shoes were forged at Shildon. Numerous other articles were handled at these shops, as well as at Doncaster, where tank hulls were assembled and erected.

Under direct contract, the Great Western manufactured at Swindon, with some machining at Caerphilly, Wolverhampton, and Reading, about 400,000 component parts. In addition, 2,800 base junction assemblies, the power unit, which either electrically or hydraulically rotates the whole tank turret, were machined and assembled complete at Swindon, where 3,700 tools for American tank equipment were also produced.

These details may suffice to convey a general idea of the share taken by the railways in the Government's tank programme. A good deal of work was done on armoured fighting vehicles as well. The Great Western machined about 12,000 turret rings, nearly 4 ft. in diameter, for three types of armoured vehicles. Some 400 internal gear teeth were cut on each of 1,595 rings. Swindon locomotive works machined spring suspension gear to the extent of 8,000 articles, but did a more spectacular piece of work in preparing over 23,000 bullet-proof plates. These were machined, hardened, levelled, and tested by rifle fire at a range built for the purpose. Similar work was done at Doncaster, L.N.E.R., where a heat treatment furnace was modified to take armour plating. Material from the steel works was shaped to accurate limits with an acetylene flame controlled by a profile cutting machine, heat treated, levelled, and tested by armour piercing bullets on a rifle range. Nearly 60,000 pieces were provided for the manufacturers of armoured fighting vehicles. At Wolverton, the L.M.S.R. converted nearly 700 commercial motor vans and rulleys into armoured vehicles. Until metal plating was available, the vehicles were fitted with a double wood box arrangement lined with pebbles.

Guns, Gun Mountings, and Gun Carriages

A great deal of intricate work connected with guns and gun mountings was entrusted to the railway mechanical engineering departments, and performed with admirable skill and precision. The Great Western not only made two types of 6-pdr. naval gun mountings at Swindon, but designed one of the types there. Each contrivance comprised the structure in which the guns were housed and the machinery for elevating and training them in the direction of fire. The total number of these mountings turned out was 400, together with 550 sets of the main parts involved. Then, in conjunction with the L.N.E.R. and S.R., the Great Western produced 30 sets of 2-pdr. mountings, which held four guns, and had to be finished to exceedingly fine limits.

The L.N.E.R. executed an Admiralty order for 4-in. gun mountings, assembling at Doncaster parts manufactured there and at Darlington, Stratford, and Cowlairs works. This contract included the percussion firing gear, elevating gear, training gear, recoil, sights, gun cradle, and erection complete. Doncaster machined 13,300 breech rings for 2-pdr. and 25-pdr. guns, and Shildon made more than three-quarters of a million parts for five types of gun. Over half a million of these parts were for the Oerlikon gun, which was one of the main means of defending our naval and merchant shipping against air attacks.

The L.M.S.R. renovated at Derby 23 12-in. howitzers, each mounted on two bogies, which were built during the last war. Derby also took a leading share in the manufacture of gun and aperture sights for American Lewis guns. This work required a high degree of accuracy, and was divided between the shops at Derby, Wolverton, and St. Rollox. A total of 12,900 sets was produced.

Nearly 100 heavy howitzers passed through the S.R. shops at Eastleigh and Ashford, while Eastleigh and Lancing carried out an urgent order from the Admiralty for 30 gun shields. Another specialty at Eastleigh was the manufacture of over 1,500 anti-tank gun barrels, and the carriage works there, assisted by the Brighton works, built 240 sets of pillar-box rocket guns. Lancing turned out close upon 35,000 drop stampings for breech mechanisms.

The three heavy Group railways were assigned substantial orders for field gun carriages and spare parts. The L.M.S.R. assembled 500 carriages for 25-pdr. field guns, and 250 for 17-pdr. anti-tank guns at Derby locomotive works. The guns for fitting to the first batch of carriages were supplied to Derby, and were tested on a special screen before they left the works. Welding was adopted extensively in carrying out both of these orders. The G.W.R. manufactured 2,850 sets of axle and brake gear for gun carriages, and nearly 3,900 complete lots of spares. From Shildon, the L.N.E.R. turned out 17,900 forgings for the same type of carriage, and assembled 130 smaller carriages at Doncaster.

Another interesting class of work was the construction of carriages and limbers for 9·2 howitzers at Wolverton. So much heavy machining was entailed that Crewe and Derby, as well as private contractors, were called upon to assist in order to keep the delivery date. For the same style of howitzer carriage, Gorton works, L.N.E.R., forged arms and axle-trees, and Crewe heat treated 700 meehanite cast-iron hubs. Another large order placed at Crewe covered the forging of 5,000 axle-trees for 6-pdr. gun carriages.

Shells, Bombs, and Cartridge Cases

As in the last war, the railways were invited to set up plants for the manufacture of shells, but on this occasion their experience was somewhat disappointing, through changes in armament policy which were beyond their control. At Swindon the Great Western prepared two plants at a great expenditure of time and labour. Much excavation and deep concreting was needed to provide secure foundations for the forging presses and other machinery. Many tools and gauges were also got ready, but no sooner had

production started in earnest than the Government decided to move one plant bodily across the Atlantic and to cease producing the particular type of shell made in the second plant. In the end, the actual output of shells was short of 64,000. Swindon, however, has to its credit the manufacture of about 447,000 copper bands for five different sizes of shell and the forging of 74,000 trench mortar bombs.

The original plan of the L.M.S.R. was to instal three shell-forging plants at Wolverton, but two 25-pdr. shell plants were dismantled and despatched to America. Despite this, it fell to the lot of Wolverton to machine 88,500 shells of that type. The remaining unit, which handled 60-pdr. ammunition, turned out 4·5-in. shells to the number of 165,600, and 4·2-in. shell body forgings to the extent of 431,000. These figures look small when compared with the output of 6,300,000 Oerlikon shells at Horwich. These 20-mm. shells were machined from solid lead bearing steel, and, except for the base ending, were produced entirely on automatic machines. To overcome difficulties experienced under Service conditions, it became necessary to weld a thin disc of steel over the base of each shell, and over 15 million were so treated at Horwich. The number of cartridge cases reformed or reconditioned at Horwich ran to millions—3,682,000 to be precise. A total of 600,000 copper bands for shells came from Wolverton, Crewe, Derby, and St. Rollox works. Bomb castings, chemical shell container forgings, and similar articles were also turned out at one or other of these workshops.

Apart from processing more that 2¼ million projectiles at five of its main works, the L.N.E.R. undertook to convert two shops at Dukinfield, near Manchester, into factories for the forging and machining of shells, the manufacture from brass discs of new cartridge cases, and the reforming of used cartridge cases. The Government was to supply the machinery and raw materials, while the company was to run the factory as its agent. Sir Nigel Gresley, who was then Chief Mechanical Engineer, gave much care and thought to the layout of the plant, as well as to the selection of supervisors from his staff and to the recruitment of labour from outside sources. After a crop of initial troubles, due in great measure to the slow delivery of machinery by the contractors, the shell shop was just getting into full swing when the Government decided that further supplies of shell were not required and operations ceased abruptly in November, 1942. By that date the number of shells forged was more than 410,000. The shell shop was re-opened from March to June, 1945, and turned out a further 40,000 shells during that period. The other Dukinfield factory continued to work day

and night shifts, employing over 1,400 people, mostly women. By November, 1943, the plant manufactured 1¼ million cartridge cases, and reformed 5½ million. These varied from 2-pdr. A. T. to 9·2 H.E. shells. In addition, over 34 million 20-mm. aircraft cannon cartridge cases were heat treated at Dukinfield.

It may not be inappropriate to mention here that, by a second arrangement with the Government, the L.N.E.R. helped to retrieve the serious situation which arose when supplies of ball bearings from overseas were cut off. Every week, 25,000 of these bearings were required. Forging plant, imported from America, was installed at Shildon, and produced, by the end of 1943, over a million forgings. Shildon has a good reputation for hot iron work. The plant there turned out 20,000 of the 27,000 tons of drop stampings and forgings manufactured by the L.N.E.R. for Government purposes, in addition to 36,000 tons made for railway purposes. The Swindon works of the G.W.R. were another fruitful source of supply for a wonderfully varied assortment of drop-forgings. The L.M.S.R. made 11,000 tons of drop stampings at Derby and Crewe, 1,600 tons of steel castings at Crewe, and about the same quantity of non-ferrous castings at five of its principal works.

Bridge Work

In no previous war have so many bridges been blown by the enemy, or destroyed by bombing and artillery fire. As it was impossible to use bridges of conventional types for purposes of replacement, the War Office designed a structure composed of interchangeable parts, which could be erected quickly, even in the thick of the fighting. The L.M.S.R. rendered assistance by developing and manufacturing 75 sets of jigs at Derby and Wolverton for the use of contractors in producing component parts. The company itself made a large quantity of trestles, bridge spares, and sets of flooring, as well as assembling 10 jib cranes for erecting the standard steel trestles. The Southern Railway co-operated by building over 1,500 standard trestles and column units at Lancing and Ashford. The Great Western, too, made over 40,800 components for army bridges, particularly for the Bailey Bridge, and dealt with 1,150 transoms for the Inglis Bridge. York carriage works were responsible for 165 sets of Bailey Bridge transoms, and 30 small bridge girder sets, for the Royal Engineers. Shildon turned out 120,000 tongues for Inglis Bridges. By way of contrast, Stratford works, L.N.E.R., made a number of Indian mat bridges, which were floating carpets of canvas, with capoc filling, capable of carrying considerable weights over still water; and Eastleigh locomotive works constructed 12 self-launching bridges.

In view of the need for repairing or constructing a number of bridges in this country, the R.E.C. was interested in the military structures, and had 40 sets of heavy trestles, and 60 sets of light trestles, made at L.M.S.R. works.

Landing Craft, Assault Boats, and Submarines

Though Swindon is about 60 miles from the sea, the Great Western works built 34 landing craft and fitted them with engines and nautical equipment. These craft were 40 ft. in length and 13½ ft. in beam. If they had been any larger, they could not have been transported to the coast in a state to take the water straightaway and undergo seagoing trials. At Eastleigh, the Southern constructed nearly 250 landing craft of four types, 6 fuel tenders, and 24 harbour launches. The L.M.S.R. produced 8,442 collapsible assault boats at Wolverton; and at Doncaster and York the L.N.E.R. constructed pontoons of a material that was self-sealing in the event of the skin being punctured. Another unusual piece of work entrusted to York shops was the building of hulls of 16-ft. motor dinghies. Constructed of timber throughout, the dinghies were driven by petrol engines, and had to achieve a speed of 19 knots before they were accepted by the Admiralty. Machinery and boilers for large steam launches were made at Cowlairs, and Balsa rafts at Stratford.

A good deal of work connected with submarine warfare found its way to the railway workshops. The wooden superstructures of 50 midget submarines were manufactured at Swindon. The L.M.S.R. is proud of the achievement of its Derby carriage and wagon works in delivering the first trolley for the apparatus designed to catapult aircraft from ships. Derby turned out 52 complete trolleys, and Wolverton gave further assistance to the Admiralty by manufacturing 200 S.L. domes, which formed part of one of the devices for detecting the presence of submarines. The L.N.E.R. also helped by stamping out 3,300 parts for submarine engines at Cowlairs, and performing work on cases and crankshafts for internal-combustion engines at Doncaster.

Miscellaneous Work

This heading covers a mass of useful work carried out by all four railways. Much of it was of a specialised nature, and often took the form of furnishing tools or fittings to outside engineering firms. One important item was the manufacture at Swindon of 34 electric and 6 hydraulic cranes for South Wales docks. Another essential service was discharged by the L.M.S.R. when it assembled at Derby

169 Mercer and 207 Hyster mobile cranes, which had been ordered from America to speed up the handling of traffic at goods depots and dock warehouses. The L.N.E.R. supplied from Stratford shops 390 large containers for carrying wireless apparatus by road or rail. The earlier consignments of containers despatched from Stratford were used in the North African landings and, within half an hour of reaching the shore, the transmitters were in communication with this country. The Southern Railway was entrusted with a secret commission for making four mobile units of a tank-like description at Brighton works. Further orders taken in hand by one or other of the companies ranged from target-towing equipment to motor bodies and mobile kitchens, from fly wheels and armatures to searchlight projectors and junction boxes used in the process of de-gaussing ships to counteract magnetic mines. The successful performance of so many uncommon tasks speaks highly for the originative talent possessed by the many different grades of railway workshops staff.

Assistance Rendered to the American Transportation Corps.

It has already been mentioned that the railway companies were able to put certain workshops at the service of the Government. On occasion, the acommodation was spared at some inconvenience to railway engineering or traffic working arrangements, though this could not be said of the re-opening of Crewe steel works by the Ministry of Supply for the production of 146,000 tons of steel. In much the same category may be placed a great deal of assistance rendered to the Allied Governments through the medium of the American Transportation Corps. A brief account of this phase of war preparations may fittingly close this chapter.

From September, 1943, to November, 1944, the American Transportation Corps had the use of the G.W.R. locomotive shop at Ebbw Junction, near Newport, and during that time fitted up or reconditioned 830 American 2–8–0 engines for shipment to Continental Europe. In July, 1944, the Southern Railway placed at the disposal of the A.T.C. erecting shop space and cranage power at Eastleigh for unloading and servicing diesel shunting locomotives in readiness for transit to France. Similar facilities were given for erecting Brownhoist breakdown cranes from their component parts. Again, in September, 1944, the A.T.C. prepared 186 of its own steam locomotives at Eastleigh for shipment overseas, two roads in the shed being reserved for the purpose, and special lighting being provided, so that the work might proceed night and day. The L.P.T.B. cleared the Underground rolling stock from

Hainault Depot, and allowed the U.S. Army to use it for erecting military railway wagons imported in sections. A 30-ton steam crane was lent for the purpose, and converting plant was installed for supplying power to the electric overhead crane. In the early stages of the American occupation of Hainault, the L.N.E.R. supplied a considerable quantity of material from Stratford works, as well as providing tools and forges until the U.S. Army built up its stocks and equipment.

The British railways undertook a fair amount of work for the A.T.C. in their own shops. They assembled 667 American cistern wagons (in our phraseology, petrol tanks), fitting the underframes on bogies so that the vehicles could run from the port of arrival to inland depots. American warflats, imported in parts packed in cases, were assembled—20 at Swindon and 10 at Stratford. The Great Western made 80 sets of modified brakework for these wagons and for similar wagons assembled by the Metropolitan-Cammell Carriage & Wagon Company. By a united effort, the four railways reground nearly 9,600 pairs of journals of U.S. military wagon wheels. They also substituted over 500 pairs of rolled steel wheels for the cast-iron tender wheels of American 2–8–0 locomotives, the Great Western doing the bulk of the pressing-off and pressing-on. Swindon re-bored 57 steam brake cylinders for American 0–6–0 tank engines, while thousands of small fittings were made there, and at Derby and Stratford. One curious item consisted of furniture and fittings for three motor caravans constructed at Hainault for American Commanding Officers.

Between June, 1943, and September, 1944, Ambulance Train Maintenance Section Units of the A.T.C. went through a rigorous course of training at Swindon and Doncaster works. Each unit was composed of an officer and about 30 men who were billeted in restaurant and sleeping cars placed in convenient positions at the works. The object of the courses was to instruct the American railway troops in the methods of repairing and maintaining ambulance trains made up of British railway vehicles. The training covered all branches of the subject from carriage lifting to the care of electric dynamos for coach lighting, and occupied from 10 to 13 weeks. The soldiers obtained practical experience by assisting the regular shopmen and were changed as soon as they became proficient. A considerable number of officers and men thus benefited from the courses of instruction.

Value of Work performed for the Government

The value of the manufacturing work of all descriptions carried out by the railways for the Government is summarised below.

The figures include the costs of altering workshops to suit the type of manufacture assigned to each particular place. It will be seen that the L.M.S.R. took on exceptionally heavy commitments, representing 58 per cent. of the total bill of costs :—

		£
G.W.R. ..	..	3,856,000
L.M.S.R. ..	..	22,485,000
L.N.E.R. ..	..	8,296,000
S.R. ..	..	2,587,000
L.P.T.B. ..	..	1,775,000
Total	..	£38,999,000

These figures refer to work done under the manufacturing agreement between the Government and the railways. In addition, the L.P.T.B., as a member of the London Aircraft Production Group, performed work to the value of £10,300,000 for the Ministry of Aircraft Production.

CHAPTER 24

Railway Staff Problems

THE Railways Act of 1921 created the nucleus of a unique system for dealing with wages and conditions of service, which has been extended, with suitable modifications to cover the great majority of railway employees. Part 4 of the Act gave permanent shape to negotiating machinery which was devised during the last war. An elaborate framework of wages boards and staff councils was designed to settle all questions relating to the rates of pay, hours of duty, and working arrangements of salaried staff, such as stationmasters, supervisors, and clerks, and of men in what are known as the conciliation grades. Railway Police Conferences were also set up for each company. In course of time the four groups, in conjunction with the trade unions, worked out schemes for handling applications from shopmen and other grades not covered by the Railways Act. The Railways Staff Conference, comprising the chief staff officers of the four Groups, was constituted to watch the working of this complicated machinery in the interests of the companies, and to conduct negotiations with the trade unions. One of the principal functions of the conference was to represent the railways on five national bodies termed—

the Railway Staff National Council (covering salaried and conciliation staff) ;
the Railway Shopmen's National Council ;
the National Railway Electrical Council ;
the Railway Workshop Supervisory Staff National Council ; and
the Railway Police Central Conference.

The negotiating machinery which has been described above remained intact during the war, and the Staff Conference continued to meet the trade unions on behalf of the railways. The war, however, raised problems common to the whole of the controlled railway undertakings which necessarily had to be considered by the R.E.C. Applications for war advances may be quoted as an example of claims which went before the R.E.C. and were referred to the Minister of War Transport for a decision. Obviously, the R.E.C. required expert guidance in handling appeals of that nature, and appointed the members of the Railway Staff Conference, with the Chief Staff Officer of the L.P.T.B., as its Staff Committee. Any question which the R.E.C. was unable to settle might be

pursued through the established procedure for negotiation and in that event the Staff Conference represented the railways in the arbitration proceedings.

The issue of the Conditions of Employment & National Arbitration Order, No. 1305, which came into force on July 25, 1940, required that in any industry matters in dispute which could not be settled by means of the usual machinery should be referred to arbitration for a decision which would be binding on all parties. The railways agreed with the trade unions that during the term of this Order findings of the Railway Staff National Tribunal would be definitive. This understanding simplified procedure; during the war the Staff Conference appeared in no less than 40 cases taken to arbitration before the Railway Staff National Tribunal, the Industrial Court, the National Arbitration Tribunal, and the Independent Chairman of the Railway Police Central Conference.

Each member of the Staff Conference served on one or more of the standing committees of the British Employers' Confederation and stated the views of the railways on such subjects as social insurance, workmen's compensation, and rehabilitation of disabled persons. The Staff Conference also represented the railways on the National Maritime Board and the National Association of Port Employers. Another wartime duty was to give evidence on behalf of the railways before the Catering Wages Commission, appointed by the Act of 1943 to enquire into the methods of remuneration and conditions of employment in the catering industry. The Staff Conference also spoke for the railways at the Industrial & Staff Canteen Undertakings Wages Board which was set up by the Minister of Labour on the recommendation of the Catering Wages Commission.

Apart from special responsibilities such as we have described, the day-to-day staff business of the railways became exceedingly involved in wartime. The problem of manpower in the railway industry was always present to tax the energies of staff departments, whose work was regulated by a long series of Acts of Parliament, Orders in Council, and Statutory Rules & Orders. The broad effect of the rulings conveyed by these edicts will now be explained.

Principles Observed in Freeing Staff for National Service

The Military Training Act of May 26, 1939, required all railwaymen who were between 20 and 21 years of age to register, and they then became liable to be called up for military training. On the outbreak of war, the provisions of the Act were embodied in the National Service (Armed Forces) Act, 1939, which authorised

the issue of proclamations making every man between 18 and 41 years of age liable to be called up for service with the Forces, with the exception of apprentices under the age of 21. These enactments at once raised the question of restricting the recruitment of railway staff for the Forces, in view of the vital importance of rail transport to the war effort. The Minister of Labour declined to exempt railwaymen entirely, but included railway transport in a schedule of reserved occupations, the purpose of which was to ensure that people required for essential civilian work would not be recruited for service, in which their skill and experience would be of no value, if they were above a reservation age fixed for each grade. For railway officials, clerks, and the majority of the wages grades, the age was 25, but to permanent way maintenance staff, goods checkers, porters, ticket collectors, and train examiners was assigned an age of 30.

In May, 1940, a revised schedule gave certain occupations a symbol "S.T.," indicating that men engaged in them were only to be enlisted in Transportation Units, Royal Engineers. As from August 1, 1940, the reservation age for clerks was advanced to 30. Next, in April, 1941, a fresh schedule covered more occupations, and added a few rail transport grades to the "S.T." category. By raising the age limit in many cases, the new schedule included a large number of men who had previously been reserved, but in December, 1941, a further schedule introduced a new system of individual deferment. This meant that the R.E.C. had to keep in contact with the Ministry of Labour & National Service, and with the Ministry of War Transport, in order to protect railway manpower by securing the deferment of men who could not be spared without loss of operating effciency. At the same time, the railways used their best endeavours to free men for recruitment into the Transportation Units of the Royal Engineers.

Before the war, the railways not only encouraged their employees to become members of the Territorial Army, and the various Reserves of H.M. Forces, but raised complete transportation units of the Army Supplementary Reserve (Royal Engineers). About 4,500 railwaymen were enrolled in the units enumerated below :—

G.W.R. :	An Operating Company and two Construction Companies.
L.M.S.R. :	A Lines of Communications (Signals) Company, a Docks Group, and a Workshop Company.
L.N.E.R. :	An Operating Company, a Docks Group, and two Railway Construction Companies.
S.R.:	A Movement Control Group, and a Transportation Stores Company.

In addition, the Southern Railway provided about half the strength of the 343rd Company, 35th (1st Surrey Rifles), A.A. Battalion, Royal Engineers (T.A.). These units were composed of picked railwaymen, including many young and energetic officers. In all, more than 12,000 men were automatically called up in September, 1939, and the railways felt the loss of the services of these experienced men when the strain of wartime pressure became acute. On the other hand, the railways had the satisfaction of knowing that their men did splendid work, with the Forces—often in critical situations. In particular, the excellent performance of the units mentioned above thoroughly justified the pains which had been taken in peace-time to assist the Government in creating a strong army supplementary reserve.

Under the various enactments of the Government, women between 18 and 50 years of age (inclusive) could be directed to perform specified services for which the Ministry of Labour & National Service thought them suitable. Only registered women born on or after January 1, 1918, provided that they were 19 years of age, were liable to be called up for the W.R.N.S., A.T.S., or W.A.A.F. To offset the calling up of railwaymen, the Government included transport services in the list of industries to which women were directed. An agreement was reached between the R.E.C. and the Ministry of Labour that women workers would not be withdrawn unless they were in ancillary classes consisting of grades such as clerks, typists, and telephone operators. On their part, the railways agreed to release women in the calling up groups in as large numbers as possible.

There was in September, 1939, a complete absence of the excitement and enthusiasm which marked the appeals for voluntary enlistment in 1914. The railway companies set the minds of the staff at rest about the effect of national service on their pay and future prospects. An announcement was issued that staff serving with the Forces or giving whole time service with Civilian Defence Services would be treated as absent from duty with leave, and on their return, subject to physical and mental fitness, would be reinstated in posts similar to their old positions. Staff whose civil pay was in excess of their service emoluments would have the difference made good, and each employee would be credited with any increments which might become due on the scale of his own post during his absence. Arrangements would be made for keeping up contributions to superannuation, pension, and similar funds, while travelling facilities would still be allowed. These conditions applied not only to permanent staff, but to staff who, during a period of not less than six months before September 3, 1939, had been continuously employed otherwise than on casual terms.

The total number of staff released by the four main-line railways for national service was over 109,500, as shown in the table below :—

Number of Staff released for National Service

Description of Service	*Men*	*Women*	*Total*
H.M. Forces	98,603	3,129	101,732
Full-time Civil Defence	1,181	397	1,578
Mercantile marine	439	—	439
Coal mining	861	—	861
Essential industries	4,222	680	4,902
	105,306	4,206	109,512

Home Guard

When these islands were threatened with invasion in 1940, the Government appealed to all able-bodied men to form themselves into a Local Defence Volunteer Corps. The response from railwaymen was spontaneous and immediate. No less than 99,000 men from the main-line companies and the L.P.T.B. were enrolled, or about one-sixth of the staff at that time. When, later on, the Local Defence Volunteers became the Home Guard, the number of railway members increased to 120,000 or thereabouts. Among them were many veterans of the 1914–1918 war, who made excellent instructors for raw recruits. Some conflict often arose between railway requirements and the training arrangements for the men. In order to settle questions of that nature, each of the railways agreed to the appointment of one of its officers as Colonel in the Home Guard, whose duty was to keep in touch with the War Office and its Home Guard directorate. The R.E.C. also formed a committee for Home Guard affairs, on which these Colonel Commanders represented the railways.

By these means, the Railway Home Guard was organised effectively. The final arrangement was that 25 battalions were wholly composed of railwaymen, and were self-contained, while nearly 300 companies and platoons of railwaymen were attached to ordinary local battalions throughout the country. At first, the Railway Home Guard was used solely for the protection of railway properties, watching vulnerable bridges, tunnels, stations, junctions, motive power sheds, and other places where attempts at sabotage might be feared. As time passed, the general practice was for the men of the railway unit to take their places in the ordinary dispositions of the battalions to which they were attached. So capably and courageously were their duties performed that 37 names were included in the honours lists. The decorations awarded were 2 C.B.Es., 4 O.B.Es., 17 M.B.Es., 12 B.E.Ms., and 2 G.Ms. It is also fitting to record that 23 men lost their lives through hostile action while on Home Guard duty.

National Fire Guard

The Fire Prevention (Business Premises) Orders, issued in January and September, 1941, made employees in industry responsible for fire watching and fighting as auxiliaries to the National Fire Service. Owing to the irregular nature of railway traffic working, the application of these orders to the staff of the main lines and the L.P.T.B. was by no means a simple matter, and called for much consideration on the part of the Staff and A.R.P. Committees of the R.E.C. The first step was to issue instructions, common to all railways, on the authority of the R.E.C., after the code had been approved by the Ministry of War Transport and the Ministry of Home Security. These fire guard schemes had to be agreed at each centre with the staff concerned, and submitted to the Ministry of War Transport for confirmation. When the railway fire fighting organisation was complete, the number of fire guard schemes operating each night was 4,000, and 308,000 men and women played some part in them. The railway fire guards were well equipped, as the extinguishing apparatus installed in peace-time was supplemented by nearly 1,000 motor-driven pumps and 25,000 stirrup pumps. Static water tanks, canvas water dams, miles of fire hose, chemical extinguishers, and other appliances were also supplied on the scale laid down in the Fire Guard Orders. The whole of the arrangements were perfected in consultation with a number of Regional Fire Prevention Officers appointed by the Ministry of War Transport. They proved satisfactory when brought into action, as was frequently the case. One officer of great experience in this field summed up the matter in these words: "Unless one has been through the ordeal, it is difficult to realise what fire fighting during an air raid means. To the terror of fire there is added the drone of enemy planes, and the cracking of bombs. The ceaseless fire of the anti-aircraft guns adds to the noise and confusion, and the conditions try the hardest. The railway fire guards fought the fires, and defied the terror, although they were often weary men and women who had done a good day's work on the line". Deservedly a number of decorations and medals was awarded to men and women who did exceptionally good service while on fire guard duty.

Enrolment of Temporary Staff

In the early months of the war, little difficulty was experienced in obtaining male recruits to fill vacancies in the permanent staff. Subsequently, as war industries developed, there was a tendency for people to seek work on munitions, where high rates of pay could

be earned, and for the same reason many railway servants left for outside employment..

On June 5, 1940, the Minister of Labour & National Service issued the first of a set of Undertakings (Restriction on Engagement) Orders, leading up to S.R. & O. 2069, 1941, which laid down that an employer could not engage any worker in the building and engineering trades except by notifying to a local office of the Ministry of Labour particulars of the vacancy, and accepting a worker nominated by that office. In the reverse direction, a man seeking work of that description could obtain employment only through a local office. Modified restrictions of a similar type were placed on the engagement of women. The application of the Essential Work Order to the railways in October, 1941, arrested the loss of railway servants to other industries, but by that time the manpower situation was disquieting. The railways were compelled to waive the age limit for the recruitment of staff, to drop the medical examination for entrants into the lighter grades, and to discontinue the practice of obtaining character references, at the risk of lowering old standards of efficiency. Special efforts were made to extend the employment of women on work normally performed by men, tutorial arrangements being instituted for their benefit.

A Manpower Crisis

In May, 1942, the R.E.C. represented to the Ministry of War Transport that the railways had become dangerously weak on the operational side and it was agreed that no man should be withdrawn from operating grades for service in the Forces without the consent of the companies. At the same time it was arranged that men occupying posts which could be filled by women would have to be prepared to transfer to positions which could not be taken by women as the alternative to being released for the Forces. In passing, it may be noted that in 1944, no less than 60,000 women were employed on work normally undertaken by men.

As explained in the review of railway operating results, traffic was approaching a peak in 1943. The need for large numbers of extra staff in operating posts was brought forcibly home to the Ministries of War Transport and of Labour. To meet the emergency, Railway Supply Officers were appointed in specified areas to deal with the requirements of all the railways. On behalf of the Ministry of War Transport, these officers pressed the Regional Controllers of the Ministry of Labour to find an adequate supply of recruits, and their system of contacts led to a certain amount of relief, but early in 1944 about 4,000 men fit for working on the footplate had to be secured at short notice to meet current needs, and to be

ready for D-Day requirements. In agreement with the trade unions, the railways departed temporarily from the established line of promotion and used for firing shed staff who were physically fit for footplate duties. Able-bodied men were also lent by the Navy and R.A.F. to act as firemen, and the Army sent men of low medical category to assist at locomotive depots. Even these expedients would not have carried the railways safely through a critical period if the Government had not insisted upon some heavy traffics, such as iron ore, being reduced in volume from March, 1944, onwards.

There is no doubt that the authorities ran grave risks by treating the manpower question on the railways rather unsympathetically. Oddly enough, America had much the same experience. In 1944 both passenger and freight rail traffic in the U.S.A. broke all previous records. Employment on the railways increased by 4 per cent. over 1943, but the demand for railway workers exceeded the supply by 85,000, or 6 per cent. of the total number of employees. The railways employed 115,000 women, representing over 8 per cent. of the total staff. They imported 36,000 workers from Mexico and between May 1 and September 30, 1944, engaged nearly 24,000 high school boys for track work. The Mexican labour was used effectively on the permanent way and, under careful supervision, the schoolboys also produced good results. On the other side of the account, the railways spared nearly 300,000 men and women to the American fighting forces or to national service, while another 100,000 men left the railways to enter new war industries. Ordinary wastage was high, and in February, 1945, it was estimated that out of a total of 1,400,000 employees about half had no railway experience before the date of the Japanese attack on Pearl Harbour. Critical needs developed, especially on the Pacific Coast, for mechanics, firemen, shunters, and other skilled men to deal with the unparalleled movement of troops and material westward across the United States after V-E Day. So the manpower situation in the first six months of 1945 caused anxiety to railway executives who were striving to cope with a massive traffic, often hauled for uncommonly long distances over difficult routes.

CHAPTER 25

Railway Salaries and Wages

ONE of the first effects of war was a redundancy of staff in some grades through the curtailment of certain services. The railways agreed with the trade unions that men who were transferred to lower grades in order to provide them with work should not have their pay reduced, and that principle was applied throughout the war. The level of salaries and wages paid to salaried and conciliation staff in September, 1939, was settled by national agreements in the years 1919 and 1920. Workshop staff received the base rates fixed by Industrial Court Award No. 728 of 1922, together with a bonus of 16s. 6d. a week. A minimum wage of 45s. a week for conciliation staff and timeworkers in railway shops operated from July 29, 1939, but the trade unions were not satisfied, and pressed for a minimum of 50s. The Associated Society of Locomotive Engineers & Firemen also claimed increases in pay for its members. These demands were submitted to the Railway Staff National Tribunal as peace-time claims, and the hearing was conducted on that basis. The decision of the Tribunal, given on October 18, 1939, fixed minimum weekly rates for men in conciliation grades of 50s. in London, 48s. in industrial areas, and 47s. in rural areas, with corresponding rates for women of 38s., 36s. 6d., and 35s. The minimum rate for engine drivers was advanced from 72s. to 78s. a week. The railways agreed with the Railway Shopmen's National Council that the minimum rates awarded to conciliation staff should be granted to timeworkers in shops. The whole of these advances in pay took effect from October 29, 1939, and represented an increase in the railways' paybill of £1,250,000 a year.

First Wartime Claim for Higher Pay

In November and December, 1939, the first of seven wartime claims for all round increases in salaries and wages was submitted by the railway trade unions. The Railway Clerks Association asked for an increase of £20 a year for its members. The National Union of Railwaymen and the Associated Society of Locomotive Engineers & Firemen wanted an extra 10s. a week for the classes they represented. The chief reason put forward by the trade unions

in support of these applications was the rise in the cost of living since the beginning of the war, and the diminishing value of current pay, but they also urged that war conditions had added to working difficulties, expecially during the blackout, and quoted increases in pay which had been granted in the road transport industry and engineering trades. The railways replied that a cost of living sliding scale was brought into force by the National Agreements, and had automatically given increases to a number of the lower paid staff as from January 1, 1940. The railways were prepared to modify the terms of this scale to meet wartime circumstances. The trade unions had set their minds on obtaining a flat-rate increase for all their members, and after a good deal of brisk negotiation an agreement was reached in February, 1940. The cost of living sliding scale was suspended, and a war advance of £10 a year to salaried staff, and of 4s. a week to conciliation staff, was conceded as from January 1, 1940. Proportionate war advances were granted to junior male, and to female staff, as shown in the statement at the end of this chapter, which gives details of the war advances accruing at intervals of rather less than 12 months on an average between January, 1940, and July, 1945. In every case the war advance was taken into account in calculating overtime, Sunday duty, and night duty payments, but was not assessed for superannuation or pension fund purposes.

On behalf of the workshop staff, a claim had been submitted for an increase of 10s. a week. At a meeting of the Railway Shopmen's National Council, held on February 15, 1940, the matter was settled by giving, as from January 1, 1940, a war advance of 5s. a week, the amount agreed for the outside engineering industry. The award of 1s. a week more to the shopmen than to the conciliation grades no doubt weighed with the trade unions in pressing for further concessions in April, 1940. The Railway Clerks Association asked for another £15 a year. The N.U.R. and A.S.L.E. & F. proposed 6s. a week more, arguing that wages had not risen proportionately to the increased cost of living and that some items of expenditure were not covered by the Ministry of Labour cost-of-living index. The trade unions made play with the 1940 Budget proposals, including the purchase tax, as likely to bear hardly on their members, and suggested that the railways could afford to meet the claims in view of their improved financial position during the period of Government control. Negotiations led to agreement that, as from June 3, 1940, the war advance should become £18 a year for salaried staff, and 7s. a week for conciliation grades. From the same date, but under a separate agreement, shopmen received a war advance of 8s. a week.

Awards of Railway Staff National Tribunal, 1941 and 1942

When, in November, 1940, the trade unions submitted a claim that the war advance should be raised by 10s. a week for both salaried and conciliation staff, a settlement could not be reached by negotiation, and the dispute was referred to the Railway Staff National Tribunal which heard the parties in May, 1941. The trade unions again pleaded that the increased cost of living had lessened the purchasing power of wages, and that war conditions added to the difficulty, strain, and risk of railway work. At the same time, the growing volume, and nature, of wartime traffic had increased the importance of railwaymen's duties. The Tribunal, by its decision No. 7, May 15, 1941, increased the war advance to £28 a year for salaried staff, and to 11s. a week for conciliation grades, with effect from January 6, 1941. As from the same date, the shopmen's war advance was fixed at 12s. a week by the Railway Shopmen's National Council.

In September, 1941, the N.U.R. came forward with a new demand that adult males and females should receive a minimum wage of 60s. a week, excluding war advances granted since 1939, while the R.C.A. tabled requests that, as a wartime measure, the maximum salaries of class 5 male clerks, stationmasters, supervisors, and of Class 2 women clerks should be raised. It was also proposed that women clerks performing duties similar in character and value to those of male clerks should be paid in accordance with the male clerks' agreement. These claims were referred to the Railway Staff National Tribunal, whose decision No. 8 of March, 9, 1942, awarded, as from that date, an increase of 4s. 6d. a week in the total war wage of the lowest rated grades of conciliation staff, and an increase of £10 a year in the maximum salary of the class 5 male clerk (with a similar increase in the minimum rate of class 4). The Tribunal further awarded an increase of 2s. 6d. in the maximum weekly rate of the Class 2 woman clerk, but rejected the plea of equal pay for equal work. The railways agreed to treat stationmasters and supervisors in the same way as clerks, and settled with the trade unions consequential increases for a number of staff, in order to preserve proper differentials between their remuneration and the pay of the men in the lowest rated grades. The case of the workshop staff was referred to the Industrial Court, whose decision No. 1,872 of August 7, 1942, marched with the findings of the Railway Staff National Tribunal.

These two awards meant an addition of £4,000,000 a year to the wages bill, but led immediately to a claim from the A.S.L.E. & F..

for an increase of 6s. a week for drivers and firemen, as only firemen in receipt of the starting rate of the grade had received any benefit. In May, 1942, a settlement was effected with the Society by adding 4s. a week to the total rates of pay of drivers, motormen, and firemen, but the N.U.R. declined to be a party to the bargain, and demanded an increase of 10s. a week for wages staff. At the same time, the N.U.R. joined forces with the R.C.A. in applying for an advance of £26 a year for the salaried staff. In negotiation, the railways offered to add 4s. a week to the war advance for conciliation staff (excluding drivers, firemen, and railway dock staff, who had already received increases), and £10 a year to the figure for the salaried staff. The R.C.A. accepted this offer on behalf of the salaried staff, and the concession took effect on June 24, 1942. The N.U.R., however, decided to go before the National Tribunal, and so did the A.S.L.E. & F. when the railways declined a fresh claim for all-round increases in pay for drivers, firemen and cleaners. The Tribunal agreed with the view of the railway companies that there was no justification for improving standard rates of pay, but by decision 9 of December 9, 1942, increased the war advance to conciliation staff by 5s. a week, and to salaried staff by £13 12s. a year, as from June 24, 1942. These increases absorbed the concessions already made by agreement between the railways and the unions. In August, the Industrial Court had awarded an increase in war advance of only 4s. to shopmen as from March 9, 1942, so that the whole of the adult male wages staff were in receipt of a war advance of 16s. a week from June, 1942, onwards.

Concessions Arranged by Negotiation

Once more, in March, 1943, the three trade unions lodged claims for an increase in pay of 10s. a week for all salaried and wages staff, adult and junior, male and female alike. In support of these demands, the unions made much of the fact that a greater volume of passenger and freight traffic was being handled by a depleted staff, and suggested that railway operating called for more knowledge, skill, and ability than it did twenty years ago. In June, 1943, a settlement was negotiated on the customary lines, which discriminated between men and women, adults and juniors. The war advance to adult males became £53 6s. a year for salaried staff and 20s. 6d. a week for both conciliation and workshop staff. These changes took effect from April 26, 1943. For the first time, the full war advance was paid to staff with salaries up to £1,000 a year.

Twelve months later, the trade unions submitted a claim for the existing war advance to be increased by 12s. a week for all salaried and wages staff. It was represented that the previous settlement was regarded as far from satisfactory, and, besides reiterating the old arguments about the strenuous nature of wartime railway work, the unions drew comparisons with the treatment accorded to coal miners and dock workers. Negotiations again effected an agreement. From April 17, 1944, the war advance was increased to £66 6s. a year for adult male salaried staff and to 25s. 6d. a week for conciliation and workshop staff. Statement "A" appended to this chapter shows that the 1943 and 1944 settlements continued the practice of distinguishing between adults and juniors, but gave the same increments to the great majority of males and females in these two classes. On the other hand, the railways rejected an appeal from the trade unions that war advances should be assessed for superannuation and pension purposes. It should also be recorded that the full war advance of £66 6s. per annum was paid to staff with salaries up to £1,500 a year from November 1, 1944.

At this stage, the war advance represented an increase in the paybill costs of the main-line railways of £46,000,000 a year, or 44 per cent. Its upward grading as circumstances changed went a long way to keep railwaymen contented during the long, anxious years of the European struggle, though various other concessions arranged through the negotiating machinery helped to satisfy certain grades and sections of staff. The standard rates for the five classes of signalmen were augmented by amounts ranging from 2s. to 6s 6d. a week in May, 1942. As modern developments had placed more responsibility on men engaged in the installation and maintenance of signalling, telegraph, and telephone apparatus, their grading and rates of pay were revised in February, 1944. Similarly, changes in methods of maintaining the permanent way, such as the use of mechanical appliances, warranted increases ranging from 3s. to 5s. a week in the standard rate of gangers as from January 3, 1944. The base rates of junior conciliation staff were permanently raised, partly by agreement, and partly by a decision of the Railway Staff National Tribunal. Contrariwise, several improvements in the scales for the lower paid salaried staff, both male and female, were conceded as wartime measures. One arrangement, applicable to both salaried and wages staff, was adopted in May, 1942, to meet a complaint from the trade unions that the retention of men in employment beyond the normal retiring age of 65 was slowing down promotion among the general body of the staff. The railways agreed with the unions that a man

who would have been promoted under peace-time conditions should be paid at the rate of the higher post, on the understanding that he would be prepared to perform the higher-grade duties as soon as he was called upon to do so.

Dilution of Labour

What is usually termed the dilution of labour led to a separate series of agreements between the railways and the N.U.R. and A.S.L.E. & F. Women employed in place of men in conciliation grades received for the first three months 4s. less than the standard rate of the post, and were then paid the full rate, the women's war advance accruing from the beginning of their service. In June, 1941, it was agreed that juniors filling adult posts as a wartime arrangement should be paid the adult standard rate, plus the junior war advance, but after March, 1942, the basis of payment became the total adult rate of pay less an agreed differential of 5s. 6d. a week. The question of dilution in railway workshops was more complicated, as it involved agreements with the N.U.R., and the craft unions, over the employment of unskilled male labour on work ordinarily performed by skilled craftsmen, as well as about the replacement of men by women. These agreements embodied the practice in the outside engineering industry, and provided for women, who were able after a probationary period of 32 weeks to carry out the work of men without additional supervision or assistance, to receive the full basic rates and war advances appropriate to the posts they filled. In April, 1944, the Railway Shopmen's National Council agreed that junior males replacing adult shopmen should be paid at the composite weekly rates for the posts they held, less a differential of 7s 6d. a week.

Conditions of Railway Workshop Supervisors, Police, and Catering Staff

At the outbreak of war, the railway workshop supervisory staff was without a national agreement governing the rates of pay and conditions of service, although negotiating machinery had been in existence since 1932. This blank was filled on October 15, 1942, by a national agreement, settled by the Railway Workshop Supervisory Staff National Council. It was also decided that workshop supervisors should receive the war advance applicable to salaried staff.

The case of the Railway Police was too difficult to settle by negotiation. The first four war advances to traffic staff were paid to the police force, but in May, 1942, the Railway Police Force

Federation claimed for its members much the same pay and conditions as civic police enjoyed. As the Railway Police Central Conference could not agree terms of settlement, the demands were referred to arbitration before an Independent Chairman, appointed by the Minister of Labour to preside over the Conference. The award of the Chairman, Sir Harold Morris, M.B.E., K.C., granted improved standard rates to constables, sergeants, and inspectors, but did not put the railway police on a level with the civic police. In addition, the railway police were given the benefit of the war advance of 20s 6d. a week, as from April 26, 1943, and naturally the Railway Police Central Conference agreed that the police force should receive the subsequent addition of 5s. a week to the war payment in April, 1944. The arbitration proceedings gave rise to awkward questions about the eligibility of police constables for membership of the railway superannuation funds, but these matters are outside the scope of this narrative.

The war brought about a definite change in the position of the hotel and refreshment room staff employed by the railways. These employees number about 10,000, and are of many different types. Their conditions of service became the concern of the Licensed Residential Establishment & Licensed Restaurant Wages Board, set up by order of the Minister of Labour. Before the Board was established, certain improvements were made in the pay of the lower grades. The war advance was also adjusted to suit the peculiar circumstances of hotel business. In agreement with the N.U.R., the full amount of the war advance was paid to staff who did not reside on railway premises, and were not provided with food during their working hours. Reduced payments were made to staff who received board and lodging in proportion to the value of these benefits. Staff whose earnings were supplemented by gratuities did not receive the war advance, and in 1943 the National Arbitration Tribunal rejected an appeal for payment lodged by the N.U.R. on their behalf, though the hearing led to the whole of this section of staff sharing in service charges made to the public.

Revision of Rates of Pay and Conditions of Service, July, 1945

In March, 1945, the trade unions submitted fresh programmes for a complete revision of the rates of pay and conditions of service of all sections of railway staff.

The proposals of the three unions differed in detail, but the

summary of the principal claims given below shows that sweeping changes were suggested :—

SALARIED STAFF

1. New scales of pay for stationmasters and supervisory staff :—

	Per annum
Class 4	£350–£390
„ 3	£410–£450
„ 2	£475–£500
„ 1	£550–£600
Special class	£650

2. New Class 4 scale for Control staff, starting at £160 a year at the age of 18, and rising to £360 at the age of 36, with a proficiency bar at £280.

For higher classes, the scales for stationmasters to apply.

3. Starting rate for junior clerks to be £100 a year at the age of 16 and £120 at the age of 17.

Clerical scales to be the same as those for Control staff between the ages of 18 and 36, and then to run :—

	Per annum
Class 3	£390–£410
„ 2	£435–£460
„ 1	£500–£600
Special class	£650

4. The working week to consist of 35 hours, overtime and night duty being paid at the rate of time-and-a-half. Sunday duty to be paid at the rate of double time. Annual leave to be increased to 3 weeks for staff with 15 years' service or less, and to 4 weeks for staff with over 15 years' service.

5. Joint bodies, representative of the management and the staff, to be set up :—

(*a*) to determine the classification of posts ; and
(*b*) to select staff for promotion.

LOCOMOTIVE RUNNING STAFF

	£	s.	d.	
6. Drivers and motormen to rise to	6	12	0	a week
Firemen and assistant motormen to rise to ..	5	8	0	„
Engine cleaners to rise to	4	0	0	„
	at the age of 20.			

For the purpose of calculating payments on a mileage basis, 120 miles to constitute a day's work for footplate grades.

OTHER CONCILIATION GRADES

7. A new wages structure based on a minimum wage of £4 10s. (an increase of 13s. a week on the existing minimum), rising to a rate of £6 a week for the Traffic Regulator (an increase of 10s. 6d. a week on the existing rate), with corresponding increases for intermediate grades.

FOR ALL CONCILIATION WAGES STAFF

8. A guaranteed week of 40 hours, in periods of 5 days of 8 hours each, overtime being paid at the rate of time-and-a-half during the day, and of double time at night. Sunday duty to be paid at the rate of double time. Annual leave to be increased to 12 days. Sick pay to be allowed on a similar basis to the arrangements for clerical staff.

A contributory pension scheme to be established, providing a pension of 50 per cent. of retiring pay.

Negotiation in regard to these extensive programmes of new demands had not gone far when it was apparent that agreement could not be reached. In accordance with the established procedure, the trade unions should then have referred their claims to the Railway Staff National Tribunal, but they were unwilling to take that course, and the deadlock was reported to the Ministry of Labour & National Service. After the personal intervention of the Minister, the Rt. Hon. Mr. G. A. Isaacs, negotiations were resumed between the Railway Executive Committee and the trade unions, which pressed strongly for an early settlement. On August 17, 1945, agreement was reached about revised rates of remuneration and annual leave, but no change was made in hours of duty, and the claims in regard to sick pay and pensions were to remain in abeyance until more information became available in regard to the proposed National Insurance Schemes. A large number of subordinate matters were left over for further discussion. The agreement came into force as from July 30, 1945, except for the extensions of annual leave, which applied from January 1, 1946.

The agreement differed in principle from the six previous settlements inasmuch as extensive increases were made in standard rates of pay. Salaried staff in Classes 1, 2, and 3, as well as those at the maximum of Class 4, received a permanent increase of £15 a year. Men at the Class 4 minimum, and in Classes 5 and 6, were advanced by £10 a year, while junior male clerks were given an additional £5 a year. The standard rate for women clerks in Class 1 was increased by 5s. a week, for those in Class 2 by 3s. 6d. a week, and for girl clerks by 1s. 9d. a week. In addition, the wartime increases awarded by decision No. 8 of the Railway Staff National Tribunal to certain salaried staff, and wartime increases granted to junior clerks and Class 6 stationmasters from June 1, 1944, were merged into standard salary. Independently of these concessions, the war advance was increased to £72 16s. a year for adult males, and to £36 8s. for juniors. For adult women, the war advance became 24s. a week, and for juniors 12s. Adjustments were also made in the Sunday duty rates of pay for salaried staff, but payments for overtime and night duty were not changed. Annual leave was increased to 15 weekdays in the case of male salaried staff in Classes 3 and 4, and of men in Classes 5 and 6, with ten or more years' adult service. A similar allowance of leave was conceded to women in Special Class and in Class 1, and to those in Class 2 with 10 or more years' adult service.

The agreement proceeded to legislate for Special Class men in receipt of salaries up to £500 a year, who had previously been regarded as beyond the scope of the established procedure for

settling questions of remuneration. It was decided that their posts should be classified in four categories, to each of which were assigned appropriate minimum and maximum salaries and scales of promotion.

The conciliation staff benefited under the agreement by increases ranging from 7s. a week for men on minimum rates up to 11s. a week for the highest rated drivers. Of these increases, 2s. 6d. was added to the war advance, and the balance was added to the standard rates of pay, with which were also merged the wartime increases awarded by decision No. 8 of the Railway Staff National Tribunal. The total war advance became 28s. a week for males and 24s. a week for females. The new minimum composite rates of pay, including war advances, were :—

84s. in rural areas ;
85s. in industrial areas ; and
87s. in London.

The rate of payment for Sunday duty was increased from time-and-a-half to time-and-three-quarters in the case of conciliation grades, and annual leave was fixed at 12 days, plus leave with pay on at least two Bank Holidays.

The claims on behalf of the railway workshop staff were negotiated through the medium of the Railway Shopmen's National Council. The trade unions asked for a new wages structure based on a minimum of £4 10s. a week, with a maximum of £6 a week for skilled grades. They also proposed much the same improvements in conditions of service as were suggested for conciliation grades. An agreement, reached on August 24, 1945, completely altered the old wages system. For determining rates of pay, the London area had stood by itself, and provincial towns were divided into five classes. These five classes were reduced to two—Class A including the former Class I and 2 towns, such as Swindon, Crewe, Doncaster, and Eastleigh ; and Class B covering smaller places.

The minimum composite rates of pay for time workers were raised to £4 7s. a week in London and to £4 5s. a week elsewhere. The new rates represented increases ranging from 7s. a week for the labourer to 9s. or 10s. for a skilled fitter at the principal railway centres. Proportionate adjustments were made in the pay of women, youths, and apprentices. A guaranteed day and a guaranteed week were also conceded to workshop staff, subject to reservations in regard to holiday times, absenteeism, and strikes. Annual leave of 12 days was allowed, with payment in addition for two public holidays each year, but no change was made in other conditions of service.

Cost of Wartime Staff Settlements

The general effect of the whole of the wartime wages settlements is brought out in two statements at the end of this chapter. Statement " A " tells the story of the changes in the war advance. Statement " B " sets out the principal grades of staff, and compares the pay of each at the outbreak of war with the pay settled by the agreements, of August, 1945. The cost of applying these agreements, including an estimate of the cost of extending holidays in and after 1946, will be £19,000,000 per annum. This brings the total cost of wartime improvements in salaries, wages, and conditions of service to about £71,250,000 a year. The total amount of the annual salaries and wages bill of the four main-line companies increased between 1938 and 1944 by 68 per cent., as shown in the following table :—

	Salaries and Wages paid by main-line railways £	Percentage
1938	105,042,000	100
1939	105,020,000	99
1940	120,824,000	115
1941	133,952,000	127
1942	149,055,000	141
1943	165,466,000	157
1944	176,893,000	168

These figures have been rounded off to the nearest thousand pounds, and do not include allowances paid to staff serving with H.M. Forces, which amounted at one time to nearly £4,000,000 a year. Taking into account the addition of £19,000,000 a year mentioned above, the salaries and wages bill for 1946 will be in the neighbourhood of £196,000,000, representing an increase of 86 per cent. over 1938.

To complete this account of wartime salaries and wages, it may be added that, as a general rule, settlements relating to war advances were extended to cover the L.P.T.B. and controlled minor railways.

STATEMENT "A"

WAR ADVANCE FOR RAILWAY STAFF

Section of Staff	Total amount of war advance as it has accrued from the dates shown :—									
	1.1.40	3.6.40	6.1.41	9.3.42	23.3.42	9.5.42	24.6.42	26.4.43	17.4.44	30.7.45
Salaried staff	Per annum	Per annum	Per annum				Per annum	Per annum	Per annum	Per annum
Adult males	£10	£18	£28	—	—	—	£41 12s.	£53 6s.	£66 6s.	£72 16s.
Junior males	£5	£9	£14	—	—	—	£20 16s.	£26 13s.	£33 3s.	£36 8s.
	Per week	Per week	Per week	Per week	Per week	Per week	Per week	Per week	Per week	Per week
Adult females	3s.	5s. 3d.	8s. 3d.	—	—	—	12s.	16s. 6d.	21s. 6d.	24s.
Junior females..	1s. 6d	2s. 9d.	4s. 3d.	—	—	—	6s.	8s. 3d.	10s. 9d.	12s.
Conciliation staff										
Adult males (excluding drivers & firemen)	4s.	7s.	11s.	—	—	—	16s.	20s. 6d.	25s. 6d.	28s.
Junior males	2s.	3s. 6d.	5s. 6d.	—	—	7s. 6d.	8s.	10s. 3d.	12s. 9d.	14s.
Adult females	3s.	5s. 3d.	8s. 3d.	—	—	—	12s.	16s. 6d.	21s. 6d.	24s.
Junior females	1s. 6d.	2s. 9d.	4s. 3d.	—	—	5s. 9d.	6s.	8s. 3d.	10s. 9d.	12s.
Drivers and firemen	4s.	7s.	11s.	—	15s.	—	16s.	20s. 6d.	25s. 6d.	28s.
Workshop staff										
Adult males	5s.	8s.	12s.	16s.	—	—	—	20s. 6d.	25s. 6d.	28s.
Adult females	3s.	4s. 10d.	7s. 10d.	10s. 10d.	—	—	—	15s. 4d.	20s. 4d.	22s. 10d.
Junior males, aged 18 years and under 21	2s.	3s. 3d.	5s.	6s. 9d.	—	—	—	10s. 3d.	12s. 9d.	14s.
Under 18 years of age ..	1s.	1s. 8d.	2s. 6d.	3s. 4d.	—	—	—	5s. 1d.	6s. 4d.	7s.
Junior females, aged 18 years and under 21	2s.	3s. 3d.	5s. 3d.	7s.	—	—	—	10s. 3d.	12s. 9d.	14s.
Under 18 years of age ..	1s.	1s. 8d.	2s. 6d.	3s. 4d.	—	—	—	5s. 1s.	6s. 4d.	7s.

STATEMENT "B"

RATES OF PAY OF CERTAIN OF THE PRINCIPAL RAILWAY GRADES, AT THE OUTBREAK OF WAR, AND AT OCTOBER, 1945

Grade	*Rate of pay at the outbreak of war*	*Rate of pay at October 1945, including war additions*
	Per annum	*Per annum*
Salaried staff		
Male clerk		
Class 5—Age 18	£80	£162 16s. 0d.
„ 25	£150	£232 16s. 0d.
„ 31	(maximum) £200	£282 16s. 0d.
„ 32		(maximum) £292 16s. 0d.
Class 4—Maximum	£230	£317 16s. 0d.
„ 3 „	£260	£347 16s. 0d.
„ 2— „	£300	£387 16s. 0d.
„ 1— „	£350	£437 16s. 0d.
Stationmaster, goods agent, etc.		
Class 6—Maximum	£160	£252 16s. 0d.
„ 5— „	£200	£292 16s. 0d.
„ 4— „	£230	£317 16s. 0d.
„ 3— „	£260	£347 16s. 0d.
„ 2— „	£300	£387 16s. 0d.
„ 1— „	£350	£437 16s. 0d.
Female clerk	*Per week*	*Per week*
Class 2—Age 18	30s.	57s. 6d.
„ 25	45s.	72s. 6d.
„ 31	(maximum) 60s.	87s. 6d.
„ 32		(maximum) 90s.
Class 1—Maximum	70s.	99s.

For staff employed in London, a London allowance of £10 per annum (4s. per week for female clerks) was payable at both periods for all the above.

Wages staff in Conciliation Grades

(Note.—Rates shown are those applying in ' industrial areas ". Except in the case of trainmen (drivers, firemen, guards, and train ticket collectors) higher rates apply in London and lower rates in " rural areas ". The major part of the staff are employed in areas classified as " industrial ").

Traffic staff	*Per week*	*Per week*
Platform porter—Grade 2	45s.	85s.
„ 1	47s.	89s. 6d.
Parcel porter	50s.	89s. 6d.
Ticket collector—Class 1	58s.	95s.
„ 2	54s.	92s. 6d.
Guard—1st & 2nd years	50s.	91s. 6d.
3rd & 4th „	55s.	94s. 6d.
5th year	60s.	97s. 6d.
6th year	65s.	100s. 6d.
Shunter—Class 1	65s.	100s. 6d.
„ 2	60s.	95s. 6d.
„ 3	55s.	92s. 6d.
„ 4	50s.	89s. 6d.
Station Foreman—Class 1	65s.	100s. 6d.
„ 2	58s.	95s.
Parcel Foreman—Class 1	66s.	100s. 6d.
„ 2	60s.	95s.
Yard Foreman—Class 1	75s.	110s. 6d.
„ 2	70s.	104s. 6d.

	Boxes not normally controlling passenger trains	Boxes normally controlling passenger trains	All boxes
Signalman—			
Highest class of box	72s. 6d.	75s.	114s. 6d.
Lowest class of box	48s.	48s.	89s. 6d.

Grade	Rate of pay at the outbreak of war Per week	Rate of pay at October, 1945, including war additions Per week
Wages staff in conciliation grades—continued		
Locomotive and shed staff		
Driver—1st & 2nd years	72s.	113s. 6d.
3rd & 4th "	78s.	115s. 6d.
5th year	84s.	120s. 6d.
6th year	90s.	126s. 6d.
Fireman—1st & 2nd years	57s.	93s. 6d.
3rd & 4th "	63s.	96s. 6d.
5th to 10th year	66s.	102s. 6d.
11th year	72s.	107s. 6d.
Engine cleaner—20 & 21 years of age	45s.	85s.
22 years of age & over	48s.	
Shed labourer	46s.	85s.
Coalman (excluding men operating mechanical coaling plant)	48s.	87s. 6d.
Stores issuer	48s.	87s. 6d.
Goods and cartage staff		
Goods porter	47s.	85s.
Loader	49s.	89s.
Checker	54s.	92s.
Working Foreman	59s.	95s. 6d.
Carter	50s.	89s.
Motor driver (Vehicle over 10 cwt. capacity and under 2 tons)	57s.	94s.
Motor driver (Vehicle capacity 2 tons and up to 8 tons)	57s.	95s. 6d.
Permanent way staff		
Labourer	47s.	85s.
Lengthman & relayer (Up to 12 months' service in the grade)	47s.	85s.
Lengthman & relayer (After 12 months' service in the grade)	47s.	87s.
Sub-ganger	48s.	90s.
Ganger	52s.	96s. 6d.
Carriage & wagon staff		
Carriage cleaner	45s.	85s.
Carriage & wagon examiner	56s.	94s. 6d.
Signal & telegraph staff		
Labourer	47s.	85s.
Installer, Class 1	66s.	99s. 6d.
" 2	64s.	95s. 6d.
" 3	62s.	92s. 6d.

Wages staff in conciliation grades—continued
Signal & telegraph staff—continued

Grade	Rate of pay at the outbreak of war Per week	Rate of pay at October, 1945, including war additions Per week
Lineman	64s. —Class 1	107s. 6d.
	— „ 2	104s. 6d.
	— „ 3	101s. 6d.
Chief lineman	67s. —Class 1	113s. 6d.
	— „ 2	110s. 6d.
	— „ 3	107s. 6d.
Railway-owned dock staff		
Dock porter	52s.	94s. 6d.
„ capstanman	55s.	97s. 6d.
„ gateman	59s.	100s. 6d.
„ checker	59s.	100s. 6d.
Berthingman	62s. 6d.	102s.
Mooringman	75s.	111s. 6d.

Wages staff in workshop grades

(Note.—Rates shown are the timework rates for large towns outside London)

	Class 1 towns	Class " A " towns (i.e. towns formerly in Classes 1 and 2)
Labourer—Grade II	45s. to 46s. 6d.	85s.
„ I	45s. 6d. to 47s. 6d.	85s. 6d.
Fitter's mate	47s. 6d. to 51s. 6d.	88s. 6d.
Boiler attendant	48s. 6d. to 52s. 6d.	89s.
Brickarchman	49s. 6d. to 52s. 6d.	89s.
Tuber	52s. 6d. to 56s. 6d.	92s. 6d.
Holder-Up—Grade I	53s. 6d. to 58s. 6d.	94s.
„ II	50s. 6d. to 54s. 6d.	91s.
Springsmith	58s. 6d. to 62s. 6d.	96s. 6d.
Metal machinist—Grade I	58s. 6d.	95s.
„ II	56s. 6d.	93s.
„ III	53s. 6d.	90s.
Mason / Joiner / Carpenter — Grade I	62s. 6d.	98s. 6d.
„ II	58s. 6d.	94s. 6d.
„ III	52s. 6d.	90s.
Fitter—Grade I	62s. 6d.	98s. 6d.
„ II	58s. 6d.	94s. 6d.
„ III	54s. 6d.	91s.

CHAPTER 26

Review of Wartime Financial Results

IT is now proposed to examine the general result of the pool of receipts and expenditure, formed in accordance with the terms of the Control Agreement. The statements below tabulate for the years 1940–1944 receipts and expenditure of controlled undertakings in respect of railway operating, and also in respect of the working of L.P.T.B. road services. The results during the war years are compared with the corresponding average figures for the pre-war base periods, which were the three years 1935–1937 in the case of the main-line railways, and 1938–1939 for the L.P.T.B.

1. *Passenger Train Receipts*

	£	Percentage
Pre-War average ..	103,300,000	100
1940	104,800,000	101
1941	132,100,000	128
1942	163,500,000	158
1943	186,300,000	180
1944	194,600,000	188

2. *Freight Train Receipts*

	£	Percentage
Pre-War average ..	90,300,000	100
1940	140,500,000	156
1941	158,800,000	176
1942	176,700,000	196
1943	190,900,000	211
1944	196,100,000	217

3. *Miscellaneous Receipts*

	£	Percentage
Pre-War average ..	1,593,000	100
1940	2,709,000	170
1941	2,903,000	182
1942	3,285,000	206
1943	4,490,000	282
1944	3,656,000	230

4. *Gross Operating Receipts*

	£	Percentage
Pre-War average ..	195,236,000	100
1940	247,992,000	127
1941	293,835,000	151
1942	343,487,000	176
1943	381,679,000	196
1944	394,360,000	202

It will be observed that freight receipts increased faster than passenger train receipts, and in 1944 represented nearly half of the gross receipts, as compared with 46¼ per cent. in the base period. The increase of 102 per cent. in gross receipts was offset, to some extent, by the rapid growth of working expenses revealed in statement 5. This summary of expenditure includes provision for maintenance and renewal work which could not be carried out during the war period.

5. Operating Expenditure

	£	Percentage
Pre-War average ..	158,500,000	100
1940	203,500,000	128
1941	226,600,000	143
1942	251,700,000	159
1943	272,200,000	172
1944	301,200,000	190

The 1944 expenditure represented 76 per cent. of gross receipts. The ratio in the base period was 81 per cent.

From statements 4 and 5, we deduce that net operating receipts in 1944 were 154 per cent. above the level of the base period as shown in table 6.

6. Net Operating Receipts

	£	Percentage
Pre-War average ..	36,727,000	100
1940	44,512,000	121
1941	67,199,000	183
1942	91,772,000	250
1943	109,432,000	298
1944	93,193,000	254

In order to calculate net revenue, it remains to take into account the difference between receipts and expenses of ancillary businesses, such as steamships, docks, hotels, and collection & delivery of parcels and goods, as well as rents, interest, and other miscellaneous items. Under these heads there was an average credit of £3,176,000 in the base period, but a deficit in each of the war years, the amount on the wrong side in 1944 being £2,937,000. Net revenue in that year, as shown in statement 7, was 126 per cent. over the average figure for the base period.

7. Net Revenue

	£	Percentage
Pre-War average ..	39,903,000	100
1940	42,763,000	107
1941	65,125,000	163
1942	89,126,000	223
1943	105,568,000	265
1944	90,256,000	226

As explained in the chapters on financial arrangements under Government control, the undertakings received the whole of the net revenue in 1940, but retained only the fixed amount of £43,469,000 in each succeeding year. That sum represented nearly 67 per cent. of the total net revenue in 1941, less than 48 per cent. in 1942, no more than 41 per cent. in 1943, and 48 per cent. in 1944. In these four years the undertakings were left with rather less than £174,000,000 in return for the intensive user of their property and services, while over £176,000,000 were paid over to the Treasury.

It may be instructive to conclude this survey with a statement of the financial results of the U.S.A. railways. Table 8 sets out their total operating revenue; their net railway operating income, after taxation; and their net income, after fixed and contingent charges were met. The table covers the six years 1939 to 1944. In the last of these years the American railways handled a record passenger and freight traffic, collecting a gross operating revenue of 9,437 million dollars—an all-time peak. They showed, however, a decrease in net earnings as compared with the two previous years. Operating expenses were heavy with wage rates and the aggregate railway payroll at the highest point in history.

8. Financial Results of U.S.A. Railways (Class I)
(in millions of dollars)

	Total Operating Revenue	*Net Railway Operating Income*	*Net income*
	$	$	$
1939..	3,995	589	93
1940..	4,297	682	189
1941..	5,347	998	500
1942..	7,466	1,485	902
1943..	9,055	1,360	873
1944..	9,437	1,106	668

These are remarkable results when we recall that the American railways had a deficit of $123,000,000 in 1938. They were able to incur capital expenditures of close upon $2,100,000,000 during the four bumper years, 1941–1944, and also reduced funded debt and interest charges systematically. Dividend payments were restricted with a tight hand, and by the end of the Japanese war the railways had improved their financial status considerably. They could look forward with some confidence to weathering the storms that invariably attend the after-war reconversion of trade and industry to a peace-time footing.

EPILOGUE

We have described in some detail how the British railways ceased to be free agents on the outbreak of war, and from that time onwards adjusted their working arrangements to meet Government priorities. Simultaneously, the railways strove to keep the ordinary transport business of the country going. A crisp summary of the obstacles overcome in coping with unprecedented demands was given by Sir Alan Mount, Chief Inspecting Officer of Railways, in his report for 1944 on railway accidents. By virtue of his office under the Minister of War Transport, Sir Alan had a unique opportunity to evaluate the work done by the main-line companies. He wrote that "the exceptional nature and volume of wartime traffic, coupled with the increase in ordinary passenger travel, caused many working difficulties which were accentuated by fog, heavy snowfalls, widespread frost, and sickness considerably in excess of the normal. The cumulative effect of longer hours in traffic, heavier loads, and insufficient staff to repair and service engines had a marked effect on their general condition, and the consequential increase in failures in traffic adversely affected operating efficiency."

Notwithstanding these handicaps, accidents to trains causing serious personal injury or damage to property numbered only 402, as compared with an average of 392 for the five years 1940–1944. The number of fatal casualties among passengers and railway servants in train accidents in 1944 was 20, or one for every 10,000,000 coaching train-miles run. Omitting deaths caused by enemy action, 489 people were killed by all kinds of mishaps on the main-line and L.P.T.B. railways in 1944. That total is slightly above the average for the five years 1940–1944, but well below the average of 616 for the five years 1915–1919, when the effects of the first world war were at their worst, though traffic conditions were then less severe, with little blackout, and the railway staff was larger. The Chief Inspecting Officer took the view that, although fatalities had increased as compared with the inter-war period, it was surprising that the death-roll had been on such a moderate scale. His considered opinion was that the record of the railways constituted "an eloquent tribute to their efficiency, standard of maintenance, and the high factor of safety attained, all of which reflect the greatest credit on every railwayman and woman for the part they played in this historic year."

The Honours List during the war years included the names of a number of railway officers and men. In recognition of the ability with which they discharged their onerous duties, the honour of Knighthood was conferred upon Sir Charles H. Newton, Chief

General Manager, London & North Eastern Railway, and Sir Eustace J. Missenden, General Manager, Southern Railway Mention has already been made of several distinctions conferred upon senior railway officers who undertook special tasks for the Government. Mr. G. Cole Deacon, Secretary, Railway Companies Association, was awarded the distinction of C.B.E. for his work as Secretary of the R.E.C., and a similar honour was accorded to Mr. V. M. Barrington-Ward for acting as Chairman of the Superintendents' Committee of that body. At the same time Mr. E. G. Marsden, of the R.E.C. Secretariat, became M.B.E. A list of honours awarded to officers and men, who showed outstanding energy and skill in performing their ordinary work on the main-line railways, is given in Appendix 18. A separate list of awards for gallantry on the railways forms Appendix 19, while Appendix 20 gives particulars of awards to marine staff whose exploits are narrated in Chapter 19. Gratifying as these lists are, their length should not be regarded as any measure of the value of the services rendered to the country by the railway staff. With rare exceptions, men and women of all grades took things mostly as they came, and carried on their day-to-day work with an energy and a persistence that kept traffic moving steadily along.

The railways have good reason to be proud of the services rendered by the members of their staff who went on active service. Over 400 honours were awarded to railwaymen with the Colours, and another 200 were mentioned in despatches. In two cases a bar to the D.S.O. was won, and in four a bar to the D.F.C. The list also includes 14 American, French, Russian, Polish, and Greek awards. Honours conferred on railway staff engaged on home defence duties numbered 47, and 43 more people were commended.

There remains the sad duty to record that 3,562 railwaymen lost their lives while serving with H.M. Forces. Mercifully, the Roll of Honour for this war was not drawn out to the lamentable length of the 1914–1918 register, but the railway companies deplore the loss of such a large number of officers and men. They will do everything in their power to find suitable employment for any of their men who are so badly disabled that they cannot occupy their old posts. The return of thousands of employees who have passed unscathed through their term of service with H.M. Forces will be a welcome accession of manpower, and will go far to help the railways to restore their services to the highest standards of peacetime. The way will then be open for the planning of developments in the period of transition from old customs to new methods through which every country must pass after six years of war.

APPENDIX 1 (*a*)

STATUTORY RULES & ORDERS

1942 No. 2578

EMERGENCY POWERS (DEFENCE)

Railways

The Railways (Carriage Paid) Direction, 1942, dated December 17, 1942, made by the Minister of War Transport

In exercise of the powers conferred upon him by Regulation 55 of the Defence (General) Regulations, 1939, and of all other powers enabling him in that behalf, The Minister of War Transport hereby gives the following Direction :—

1. On and after January 1, 1943, no traffic to which this Direction applies shall be accepted by a railway company for conveyance by merchandise train unless it is consigned "carriage paid" provided that—

(*a*) cattle, sheep, pigs, fresh fruit, and fresh vegetables (including potatoes and sugar beet) consigned "carriage forward" may be accepted for conveyance up to and including March 31, 1943 ;

(*b*) seed potatoes consigned "carriage forward" may, up to and including April 30, 1943, be accepted by a railway company for conveyance from Scotland to destinations in England and Wales when the said conveyance is partly by railway and partly by sea, but not when the said conveyance is solely by railway ;

(*c*) returned empties consigned "carriage forward" to a consignee being one of the firms or persons named in the list of firms to which reference is made in paragraph 2 hereof may be accepted for conveyance up to and including January 31, 1943, or where such consignee has prior to that date applied to the railway company to agree a charge for the carriage of such returned empties under the provisions of Section 37 of the Road & Rail Traffic Act, 1933 (a), then (pending the railway company's decision on such application) up to and including March 31, 1943, unless in the meantime such application be refused when and in such case conveyance may be accepted only up to and including the date of the notification to the consignee of the refusal or January 31, 1943, whichever of those two such latter dates shall be the later.

2. The list of firms referred to above is that which is set out on pages 63 to 171 (both inclusive)—List of Firms whose Empties may be Carried with Carriage Charged Forward—of the Special Instructions relating to Goods, Mineral, and Livestock Traffic, published by the Railway Clearing House and dated April, 1941 (as amended by subsequent leaflets).

3. This Direction shall apply to all traffic for conveyance by merchandise train other than merchandise for conveyance to a trader with whom the railway company has agreed or shall hereafter have agreed a charge for the carriage of such merchandise under the provisions of Section 37 of the Road & Rail Traffic Act, 1933.

4. This Direction may be cited as "The Railways (Carriage Paid) Direction, 1942".

Signed by authority of the Minister of War Transport this seventeenth day of December, 1942.

P. Faulkner,
An Assistant Secretary

(*a*) 23 & 25 Geo. 5. c. 53.

APPENDIX 1 (*b*)

STATUTORY RULES & ORDERS

1943 No. 463

EMERGENCY POWERS (DEFENCE)

RAILWAYS (CARRIAGE PAID)

THE RAILWAYS (CARRIAGE PAID) (AMENDMENT) DIRECTION, 1943, DATED MARCH 24, 1943, MADE BY THE MINISTER OF WAR TRANSPORT

In exercise of the powers conferred upon him by Regulation 55 of the Defence (General) Regulations, 1939, and of all other powers enabling him in that behalf, the Minister of War Transport hereby gives the following Direction :—

1. The Railways (Carriage Paid) Direction, 1942 (*a*) shall have effect subject to the modifications set out in the following provisions of this Direction.

2. For paragraphs 1 (*a*) and 1 (*b*) of the Direction there shall be substituted the following paragraphs :—

> " 1 (*a*) fresh fruit and fresh vegetables (including potatoes and sugar beet) consigned " carriage forward " may be accepted for conveyance up to and including March 31, 1943.
>
> (*b*) seed potatoes consigned " carriage forward " may be accepted for conveyance up to and including April 30, 1943."

3. For paragraph 3 of the Direction there shall be substituted the following paragraph :—

> " 3. This Direction shall apply to all traffic for conveyance by merchandise train other than :—
>
> (*a*) merchandise for conveyance to a trader with whom the railway company has agreed or shall have agreed a charge for the carriage of such merchandise under the provisions of Section 37 of the Road & Rail Traffic Act, 1933 (*b*), and
>
> (*b*) cattle, sheep, and pigs."

4. This Direction shall come into force on March 24, 1943, and may be cited as " The Railways (Carriage Paid) (Amendment) Direction, 1943 ".

Signed by authority of the Minister of War Transport this 24th day of March, 1943.

P. Faulkner,
An Assistant Secretary

(*a*) S.R. & O. 1942 No. 2578. (*b*) 23 & 24 Geo. 5. c. 53.

APPENDIX "2"

FLAT RATES CHARGED TO GOVERNMENT DEPARTMENTS AND SERVICES

	per ton s.	d.
Admiralty	35	0
War Department	36	0
Canadian Military Authorities	36	0
Air Ministry (including Ministry of Aircraft Production)	36	3
Ministry of Supply	30	0
Ministry of Home Security	32	0
Ministry of Food	26	5
General Post Office	32	6
Ministry of Works	38	9
H.M. Stationery Office	64	6
Ministry of Agriculture & Fisheries	45	0
Prison Commission	56	0
Department of Agriculture for Scotland (applicable only to traffic between stations in Scotland)	36	9
Ministry of War Transport	29	5

APPENDIX 3

RAILWAY CONTROL AGREEMENT

AN AGREEMENT made this twenty-ninth day of May 1942 BETWEEN the CONTROLLED UNDERTAKINGS of the one part and the MINISTER OF WAR TRANSPORT (hereinafter called "the Minister"), of the other part.

WHEREAS :—

1. On September 1, 1939, the Minister by the Railway Control Order, 1939, took control of the controlled undertakings and subsequently the financial arrangements described in Command Paper 6168 (hereinafter called "the original arrangements") were made between the Minister and the controlled undertakings under which (inter alia) :—

(*a*) the revenue receipts and expenses of the controlled undertakings (excluding certain items) were to be pooled and the resultant net revenue was to be distributed between the parties in manner set out in the Command Paper ;

(*b*) the cost of restoring war damage up to a maximum of ten million pounds in any year was to be charged to revenue expenditure ;

(*c*) rates, fares, and charges were to be adjusted to meet variations in working costs and certain other conditions arising from the war.

2. It was a term of the original arrangements that the parties thereto might after the year 1940 jointly agree to a revision of the said arrangements.

3. A revision of the original arrangements having now been agreed to the effect (inter alia) that as from December 31, 1940 :—

(*a*) the net revenue of the Pool (credit or debit) shall be paid to or discharged by H.M. Government and H.M. Government shall pay to the controlled undertakings fixed annual sums ;

(*b*) the cost of restoring war damage shall not be charged to the net revenue accounts of the controlled undertakings ;

(*c*) the provisions relating to the adjustment of rates, fares, and charges shall cease to have effect ;

the Minister and the controlled undertakings are entering into these presents for giving effect to the original arrangements and to the agreed revision thereof.

NOW IT IS HEREBY AGREED between the parties hereto as follows :—

Definitions

In this agreement—

"Control" means the control exercised by the Minister under the Railway Contol Ordrer, 1939, or under any other Order made by him under Regulation 69 of the Defence (General) Regulations, 1939.

"The controlled undertakings" means the undertakings set out in the first column of Appendix A.

"Net revenue account" means an account of a controlled undertaking prepared under Article 1.

"The net revenue of the pool" means the aggregate, for each accounting period, of the net revenues (debit or credit) of the controlled undertakings as shown by the net revenue accounts for that period.

The accounting periods are :—

(*a*) the period from September 1 to December 31, 1939, inclusive ;
(*b*) thereafter each calendar year completed during the control ;
(*c*) the period from January 1 in the year in which the control ceases until the end of the month in which the control ceases, inclusive.

" Base period " means in relation to any controlled undertaking the period or average of periods shown in the second column of Appendix A.

" War damage " has the meaning assigned to it by Section 80 of the War Damage Act, 1941.

" The Rules " means rules made under Article 29.

" Maintenance " includes repairs and renewals.

The Net Revenue Accounts

(*A. General Provisions*)

ART. 1. At the end of every accounting period or as soon thereafter as is practicable an account (herein called " the net revenue account ") shall be prepared by each of the controlled undertakings numbered 1-13 in Appendix A of its revenue receipts, revenue expenditure, and net revenue for that period, in accordance with the following provisions.

ART. 2. Such account as regards a controlled undertaking which is under a statutory duty to prepare an account in accordance with Account No. 8 of the Statutory Form of Railway Accounts and the rules approved by the Minister under Section 77 (1) of the Railways Act, 1921, shall be compiled in accordance with Account No. 8 and the said rules with such modifications as the provisions of this Agreement may require ; and as regards any other controlled undertaking shall be compiled in such manner that the total net revenue of that undertaking shall be ascertained as if its accounts had been prepared in accordance as aforesaid.

ART. 3. No sum shall be included in respect of any ownership of, or interest in, the undertakings set out in Appendix B (hereinafter called " the excluded undertakings ") provided that if any money is invested by a controlled undertaking in an excluded undertaking more or less than the money so invested at the end of the base period a reasonable sum by way of interest on the difference shall be credited or debited (as the case may be) in the net revenue accounts of that undertaking.

ART. 4. Where capital is raised or redeemed by a controlled undertaking subsequent to the end of the base period, there shall be debited or credited (as the case may be) in the net revenue accounts of that undertaking the amount of the interest or dividends incurred or saved by the raising or redemption of such capital.

ART. 5. In the net revenue accounts

(*a*) all payments arising out of requisitioning by the Minister of privately-owned railway wagons under the Defence (General) Regulations, 1939,

(*b*) all expenditure by or on behalf or in respect of the Railway Executive Committee,

(*c*) any payment by the London Passenger Transport Board or an Amalgamated Railway Company under Sections 88 (2) (i) and 89 (12) of the London Passenger Transport Act, 1933,

shall be included.

ART. 6. Effect shall be given in the net revenue accounts for the accounting period ended December 31, 1939, to the operation of the London Passenger Pooling Scheme, and the difference between the net revenue of the London Passenger Transport Board for that period as ascertained under the provisions of Article 2 and its minimum amount for that period shall be paid by H.M. Government to the Board and such payment shall be included in the net revenue account of the Board.

ART. 7. In preparing the net revenue acconnts each controlled undertaking shall follow the same accounting practice as in the base period (or in the case of any average period the last year thereof) except is so far as it is necessary to depart from such practice in order to conform to the provisions of this agreement or the Rules.

(*B. Maintenance Charges*)

ART. 8. The sum to be charged in any accounting period for the items of maintenance set out in the Rules shall consist of:—

(i) "the base period charge"—(that is, the aggregate of the sums charged for such items in ascertaining the net revenue for the base period)—with such variation as would have been necessary in the base period to correspond with any variation which has taken place in the assets which are subject to maintenance; and

(ii) an addition or deduction (as the case may be) to represent the change in the real value of the base period charge (as so varied) due to increases or decreases in the hourly cost of wages and in price levels;

Provided that where the accounting period is less than one year the charge allowed under this paragraph shall be a proportionate charge calculated in accordance with Article 15 (1) on the basis of the gross traffic receipts of the relevant controlled undertaking, or (in the case of an undertaking whose gross traffic receipts are not ascertained) calculated in the proportion which the accounting period bears to the year.

ART. 9 (1). If the charge allowed under Article 8 in an accounting period is greater than the net amount actually expended on such items in that period the difference shall in any subsequent accounting period be brought up to date by an addition or deduction ascertained as in Article 8 (ii) and such difference (with such addition or deduction if any) is herein referred to as "arrears of maintenance."

(2) If the said net amount is greater than the said charge the excess shall not be included in the net revenue accounts but for the purpose of ascertaining if any adjustment is due under paragraph (1) of this Article such excess shall extinguish a corresponding amount (at base period values) of arrears of maintenance. For this purpose an excess shown in an earlier account shall have priority over an excess shown in a later account.

ART. 10. Provisions shall be made in the Rules for carrying into effect the two preceding Articles and in particular for securing that:—

(i) the items of maintenance shall so far as practicable include all sums charged in respect of maintenance of the assets of the controlled undertaking which are subject to maintenance;

(ii) the addition or deduction to be made under Article 8 (ii) shall be calculated by reference to the difference between the aggregate of the sums expended on the said items in the accounting period and the corresponding aggregate had such expenditure been calculated at base period prices.

ART. 11. No other charge shall be allowed in respect of the said items of maintenance except so far as the Minister, in respect of wear and tear which is shown by the undertaking to be abnormal as compared with the base period, may agree to its inclusion;

Provided that where the amount allowed under Articles 8 and 9 during the period of control is less than the amount actually expended during that period there shall be included in the net revenue accounts such sum (not exceeding the difference between the amount allowed and the amount expended) in respect of such abnormal wear and tear as aforesaid as may be agreed between the parties or in default of such agreement be determined by arbitration.

ART. 12. If in any accounting period the sum charged in respect of items of maintenance as provided by this Agreement exceeds the amount actually expended on such items in that period the difference (herein called "an unexpended balance") shall be dealt with under the provisions of Articles 19 to 25.

(*C. War Damage*)

ART. 13. (1) A controlled undertaking shall charge to its net revenue account up to December 31, 1940, the amount taken in respect of the war damage of that undertaking for the purpose of ascertaining the figures set out in Command Paper No. 6252 of 1941 but such amount shall be distributed among the controlled under-

takings numbered 1-9 in Appendix A in like manner as that part of the balance of the net revenue of the pool to which Article 14 (ii) (*a*) applies.

(2) No charge shall be made in the net revenue accounts for any accounting period after December 31, 1940, in respect of war damage or insurance for war damage (other than war damage not covered by or by virtue of the legislation referred to below, and other than premiums payable under Part II of the War Risks Insurance Act, 1939, so far as such premiums are properly chargeable as a working expense) or in respect of any contributions which may be payable by the controlled undertakings under the legislation relative to war damage which H.M. Government may introduce in respect of public utility undertakings, but any charges so excluded from the net revenue accounts may be adjusted between any of the controlled undertakings inter se in proportion to their respective minimum amounts or otherwise as may be agreed between such undertakings.

The Net Revenue of the Pool

ART. 14. The distribution of the net revenue of the pool for each accounting period up to and including the period ending December 31, 1940, shall be as follows :—

(i) There shall be paid to each of the controlled undertakings an amount (herein called "the minimum amount") which shall be deemed to be the net revenue of that undertaking for the base period. The aggregate of the minimum amounts is shown in the second column of Appendix A and payment to the undertakings numbered 1-12 of the sums set opposite their names in that Appendix shall be a discharge of the payment to be made to the controlled undertakings under this paragraph. In the event of the net revenue of the pool being insufficient to cover the aggregate of the minimum amounts, the deficiency in the pool will be made good by H.M. Government.

(ii) The balance of the net revenue of the pool, after payment of the minimum amounts, shall be applied as follows :—

(*a*) There shall be distributed among the controlled undertakings numbered 1-9 in Appendix A in proportion to their respective minimum amounts so much of the balance as does not exceed the difference between the aggregate of the minimum amounts shown in the second column of that Appendix and the sum of £43,515,204.

(*b*) Of the remaining balance one-half shall be distributed among the controlled undertakings numbered 1-9 in Appendix A in proportion to their respective minimum amounts, and the other one-half shall be paid to H.M. Government, until the aggregate of the sums due to those undertakings under this Article shall, after taking into account the net revenues (credit or debit as the case may be) from the excluded undertakings together with the adjustments of interest referred to in Article 3, be equal to the aggregate of their standard revenues as shown in Appendix C.

Provided that the sums paid to any individual undertaking under this Agreement shall after taking into account its net revenues from excluded undertakings and adjustments of interest as aforesaid not exceed its standard revenue (as so shown) and any sum which an undertaking would, but for this proviso, have received under this Article shall be distributed among the remainder of the undertakings numbered 1-9 in Appendix A in proportion to their respective minimum amounts.

(*c*) Any balance of the net revenue of the pool remaining after the payments hereinbefore directed shall be paid to H.M. Government.

ART. 15. (1) The amounts attributable to an accounting period of less than one year for the purposes of Article 14 shall be calculated in the proportion which the gross traffic receipts of the controlled undertakings during the corresponding period of the year or average of the years upon which the minimum amounts are ascertained bear to the total gross traffic receipts of that year or average of years.

(2) In respect of the accounting period ended December 31, 1939, the amounts so calculated shall (without prejudice to the proviso to (*b*) of Article 14 (ii)) be

distributed between the controlled undertakings in the proportions which their respective minimum amounts for a full year bear to the aggregate of those amounts.

ART. 16. After December 31, 1940, H.M. Government will in respect of each accounting period pay to each of the controlled undertakings numbered 1-12 an annual sum as set out in the third column of Appendix A (or when the accounting period is less than one year a proportion of that sum calculated in accordance with the proviso to Article 8) and the net revenue of the pool for that period if a credit shall be paid to H.M. Government and if a debit shall be paid by H.M. Government in manner determined by the pool account referred to in Article 17 (1).

ART. 17. (1) The net revenue of the pool shall be ascertained by means of an account (entitled "the pool account") prepared by the Railway Clearing House and certified by the Minister at the end of each accounting period or as soon thereafter as practicable and the sums due to and from the various parties under the provisions of this Agreement shall be determined by the pool account and shall be payable in the manner provided in the next following paragraph.

(2) Provisional four-weekly settlements and payments shall be made as soon as practicable after the end of each four-weekly period and in any case not later than 40 days thereafter and shall be adjusted by final settlements and payments in accordance with the pool account.

Adjustment of Net Revenue of the London Passenger Transport Board

ART. 18. As soon as the sums payable to the London Passenger Transport Board under the foregoing provisions for the accounting period ended December 31, 1939, have been ascertained, such adjustment shall be made by way of payment between the Board and H.M. Government as will secure that the net revenue received by the Board from all sources in respect of the six months ended December 31, 1939, shall be £2,430,000 (the estimated net revenue for the corresponding period of the previous year) neither more nor less.

Trust Funds

ART. 19. There shall be set up in respect of each controlled undertaking a fund (hereinafter called "the Trust Fund") in the joint names of a nominee of H.M. Government and a nominee of the controlled undertaking (hereinafter called "the Trustees") and the following sums shall be paid into that fund by the undertaking :—

(*a*) the unexpended balances referred to in Article 12 ;

(*b*) the balance of any sum received from any source by the undertaking, in respect of an asset lost during any accounting period, over the expenditure incurred in that period by the undertaking in replacing that asset or over the amount written off capital account in that period in respect of that asset (not being a sum dealt with in accordance with the practice of the undertaking through the maintenance items in its revenue accounts).

ART. 20. During the period of control the Trustees shall from time to time pay to the said undertaking out of the Trust Fund any expenses incurred by the undertaking :—

(*a*) in maintenance in excess of the charge allowed under Article 8 not exceeding the sums paid into the fund under Article 19 (*a*) ;

(*b*) in the replacement of any lost asset, not exceeding the sums paid into the fund under Article 19 (*b*).

ART. 21. Any moneys remaining in the Trust Fund after the end of the period of control shall be dealt with as follows :—

(i) There shall be paid out to the said undertaking any balance of the amounts contributed by the undertaking in respect of maintenance and lost assets, subject, however, to adjustment in respect of :—

(*a*) Such revision of the addition to or deduction from the charges for maintenance made under Article 8 (ii) and comprised in the said balance as may be necessary to reflect the trend of variations in the hourly cost of wages and in price levels subsequent to the end of control as compared with the like cost and levels upon which the contributions to the Trust Fund were based and for the better ascertainment of such trend the Trust Fund shall/be kept in being for three years after the end of the period of control, and the calculation to be made under Article 10 (ii) shall continue to be made for each of those three years.

(*b*) Such revision of the balance in respect of maintenance as may be necessary where the replacement of lost assets has the effect of cancelling arrears of maintenance.

(ii) Payment of the said balance shall be made in manner following, that is to say :—

(*a*) six months after the end of the period of control the Trustees shall pay to the undertaking a sum as near as may be equivalent to the base period values of that part of the said balance which has been contributed by the undertaking in respect of maintenance ;

(*b*) as soon as the addition or deduction referred to in (i) (*a*) of this Article has been provisionally revised by a calculation made in accordance with Article 10 (ii) for the first of the three years after the period of control, one-third of such addition or deduction provisionally revised as aforesaid shall be paid by the Trustees to the undertaking or by the undertaking to the Trust Fund as the case may be ;

(*c*) as soon as the revised addition or deduction has been further revised by a similar calculation for the second of the said three years, one-third of such addition or deduction shall be paid in the same manner ;

(*d*) the Trustees shall pay to the undertaking any expenses incurred after the end of control by the undertaking in the replacement of any lost asset not exceeding the sums paid into the Trust Fund by the undertaking under Article 19 (*b*) ;

(*e*) at the end of the third year the sum due under (i) of this Article after taking into account the payments made under (*a*), (*b*), (*c*), and (*d*) above shall be ascertained, and shall be paid by the Trustees to the undertaking to the Trust Fund as the case may be.

(iii) The moneys thereafter remaining in the Trust Fund may be paid to any of the controlled undertakings in respect of any claim arising out of control (other than a claim which is properly chargeable to the net revenue account of that undertaking) to which in the Minister's opinion the money should be applied; and subject thereto shall be paid to H.M. Government.

(iv) If the moneys in the Trust Fund are insufficient to meet the payments due from the Trustees under (ii) of this Article H.M. Government shall pay to the Trust Fund such sum as may be necessary to make good the deficiency.

ART. 22. Any payment made by the Trustees to H.M. Government under (iii) or by H.M. Government to the Trust Fund under (iv) of the preceding Article, shall be passed as a special item through the pool account for the final accounting period.

ART. 23. Any moneys standing to the credit of the Trustees shall be invested by them in Government securities and any interest from the investment of such moneys or the profit or loss on realisation of the investments shall be credited or debited (as the case may be) to the Trust Fund ;

Provided, however, that any part of the interest so credited which in the opinion of the Trustees represents interest on any balance referred to in Article 19 (*b*) shall be transferred to the controlled undertaking and included in its net revenue account for the relevant accounting period.

Provided also that if the Trustees think fit they may lend to the controlled undertaking for the general purposes of the undertaking such amount on such terms as may be approved by the Minister. Such loan shall for all the purposes of this Agreement be deemed to be an investment by the Trustees under this Article,

and the interest payable thereon by the controlled undertaking to the Trust Fund shall be charged in the net revenue account for the relevant accounting period.

ART. 24. Upon the execution of this Agreement an account shall be taken of the moneys due to the Trust Fund from the beginning of the control up to the date of the taking of such account and such moneys shall be paid into the Trust Fund together with interest on such moneys (at rates to be fixed from time to time by the Trustees) from forty days after the end of the four-weekly period in respect of which such moneys would have been payable to the Fund if this Agreement had been executed at the beginning of control, and the said interest shall be charged n the net revenue account for the relevant accounting period.

ART. 25. (1) The provisions of Article 17 (2) shall apply to settlements and payments in relation to the Trust Fund.

(2) The Trustes shall prepare and submit accounts in accordance with the rules to be made by the Rules Committee.

Air Raid Precautionary Measures

ART. 26. (1) The terms of the agreements of January 11 and 16, 1939, respectively in regard to Air Raid Precautionary Measures on the main-line railways and the railways of the London Passenger Transport Board shall be modified and extended as set forth in Appendix D.

(2) In respect of any accounting period, the corresponding net revenue of the undertakers in respect of a like accounting period before the outbreak of war referred to in Sub-section (4) of Section 40 of the Civil Defence Act, 1939, and the net revenue of a determined base (pre-war) period referred to in the said agreements of January 11 and 16, 1939, respectively shall be in the case of the London Passenger Transport Board the amount of its average net revenue for the three years ended June 30, 1937, 1938, and 1939 (or for the corresponding portion of those three years); and in the case of any other controlled undertaking, its minimum amount for such accounting period.

(3) Any payment by a controlled undertaking under Section 40 (4) of the Civil Defence Act, 1939, and paragraph 2 (*b*) of the last-named agreements shall not be included in the expenditure of that undertaking for the purposes of the net revenue accounts.

Insurance

ART. 27. In respect of the insurance of all risks other than war risks a controlled undertaking shall unless otherwise authorised by the Minister continue the practice was following at the date of the commencement of control.

Investigating Officers

ART. 28. Investigating officers shall be appointed by the Minister and the Railway Clearing House respectively for the purpose of jointly investigating the accounts to be prepared under this Agreement, and reporting thereon to the Rules Committee.

Rules

ART. 29. A Committee (herein called "The Rules Committee") shall be appointed in the following manner:—

One representative by the Minister, and five representatives by the Railway Clearing House.

(2) Rules shall be made by the Rules Committee for the purposes specifically ndicated in this Agreement and also in respect of the following matters:—

(*a*) matters consequent upon the formation of the pool;
(*b*) the apportionment of receipts and expenditure between the control and non-control periods;
(*c*) the treatment of provisions for liabilities;
(*d*) the preparation and submission of accounts; and
(*e*) any other matter which in the opinion of the Minister and the Railway Clearing House should be the subject of rules.

(3) Any questions arising on the accounts to be prepared under this Agreement shall be referred to the Rules Committee for determination but subject in the event of the Rules Committee failing to agree or of any party being aggrieved by their decision to arbitration as hereinafter provided.

Payments by Government Departments

ART. 30. Payments by Government Departments to the controlled undertakings in respect of services rendered to them by such undertakings (including conveyance of traffic) or in respect of the exclusive use by such Departments of the property of a controlled undertaking (including the carrying out by them of works on such property) will be in accordance with Treasury instructions applicable to such payments issued from time to time, and in so far as such instructions are not applicable, in accordance with any provisions of the Compensation (Defence) Act, 1939, relating to such services and use; Provided that no instructions contained in the Treasury Circular reproduced in Appendix E shall be varied without the agreement of the parties.

Rates, Fares, and Charges

ART. 31. The provisions in the original arrangements for the adjustment of rates, fares and charges shall as from December 31, 1940 cease to have effect.

Arbitration

ART. 32. Any question arising on the construction of this Agreement or out of anything herein contained, including any question in respect of the preparation of any account, the application of the net revenue or the payments made or to be made to and from the Trust Funds shall be referred to a single arbitrator in accordance with the provisions of the Arbitration Acts, 1889 to 1934 (or any statutory modification thereof for the time being in force).

Period of Control

ART. 33. Control will be continued for a minimum period of one year after the cessation of hostilities. Before control comes to an end (*i.e.*, before all statutory rights and obligations as they exist at that time again apply to the controlled undertakings) time will be given for the operation of any statutory machinery governing the level of charges.

Discharge

ART 34. These arrangements are to be in full discharge for and in satisfaction of all claims which might otherwise have been made arising out of or in respect of the control of the controlled undertakings by H.M. Government.

[APPENDICES.

APPENDIX A

Name of Controlled Undertaking (1)	Minimum Amounts (2) Amount	Base period	Annual sums for the purposes of Article 16 (3)
	£		£
1 Southern Railway Company	6,163,043	Three years ended December 31, 1937	6,607,639
2 Great Western Railway Company	6,144,780	do.	6,670,603
3 London Midland & Scottish Railway Company	13,465,624	do.	14,749,698
4 London & North Eastern Railway Company	9,188,960	do.	10,136,355
5 London Passenger Transport Board	4,482,369	The year ended June 30, 1939	4,835,705
6 East Kent Light Railway Company	3,283	Three years ended December 31, 1938	3,578
7 King's Lynn Docks & Railway Company (*)	5,319	Three years ended December 31, 1937	5,798
8 Mersey Railway Company (¶)	100,895	Year ended June 30, 1939	109,976
9 Shropshire Railways Company	813	Three years ended December 31, 1938	886
10 Kent & East Sussex Light Railway Company	1	do.	1
11 Shropshire & Montgomeryshire Light Railway Company (†)	1	Three years ended December 31, 1937	1
12 The following Worked Lines :—			
(a) Easton & Church Hope Railway Company	1	do.	1
(b) Fishguard & Rosslare Railways & Harbours Company (§)	35,543	do.	35,543
(c) Forth Bridge Railway Company	121,933	do.	121,933
(d) North Devon & Cornwall Junction Light Railway Company	6,614	do.	6,614
(e) Salisbury Railway & Market House Company (‡)	387	do.	387
(f) Southport & Cheshire Lines Extension Railway Company	7,732	do.	7,732
(g) Weymouth & Portland Railway Company	4,395	do.	4,395
(h) Whitechapel & Bow Railway Company	14,360	do.	14,360
(i) Great Central & Midland Joint Committee (Lessors)	70,000	do.	70,000
(j) Great Western & Great Central Railways Joint Committee (Lessors)	87,500	do.	87,500

NOTES

(*) No charge to be made under Article 8 of the Agreement in respect of the sum of £10,881 expended in 1934 in connection with the repair work at the lock entrance but charged in the accounts for the year 1935.

(¶) No adjustment to be made under Article 8 of the Agreement in respect of the repair and renewal of additional and improved assets provided in connection with the adaptation of the plant and equipment of the Mersey Railway Company for through running with the London Midland & Scottish Railway Company.

(†) No charge to be made in the Net Revenue Accounts of the Shropshire & Montgomeryshire Light Railway Company in connection with the liability of that company under their guarantee of the interest on the Shropshire Railways Company 4½ per cent. Prior Charge Debenture Stock.

(§) That part of the undertaking situate in Great Britain and leased to the Great Western Railway Company.

(‡) Railway undertaking only.

APPENDIX A—*continued*

Name of Controlled Undertaking (1)	Minimum Amounts (2) Amount	Minimum Amounts (2) Base period	Annual sums for the purpose of Article 16 (3)
13 The following Joint Committees :—	*Included in minimum amounts of the Parent Undertakings numbered 1-5 in this Appendix*	*Three years ended December 31, 1937*	*Included in the annual sums of the Parent Undertakings numbered 1-5 in this Appendix*
(*a*) Cheshire Lines Committee ...			
(*b*) Great Central & Midland Joint Committee (Lessees) ...			
(*c*) Great Central & North Staffordshire Committee ...			
(*d*) Great Central, Hull & Barnsley, & Midland Committee ...			
(*e*) Great Western & Great Central Railways Joint Committee (Lessees) ...			
(*f*) London Midland & Scottish & Great Western Joint Committee (Severn & Wye & Severn Bridge Railway) ...			
(*g*) Manchester, South Junction & Altrincham Railway Company ...			
(*h*) Methley Railway Joint Committee ...			
(*i*) Metropolitan & Great Central Joint Committee ...			
(*j*) Midland & Great Northern Railways Joint Committee ...			
(*k*) Norfolk & Suffolk Joint Railways Committee ...			
(*l*) Oldham, Ashton-under-Lyne & Guide Bridge Junction Railway Company ...			
(*m*) Somerset & Dorset Railway Joint Committee ...			
(*n*) South Yorkshire Joint Line Committee...			
(*o*) Whitechapel & Bow Railway Joint Committee...			
14 The following Joint Lines :—	*Included in the minimum amounts of the Parent Undertakings numbered 1-5 in this Appendix*		*Included in the annual sums of the Parent Undertakings numbered 1-5 in this Appendix*
(*a*) Axholme Joint Railway ...			
(*b*) Dumbarton & Balloch Joint Railway ...			
(*c*) Dundee & Arbroath Joint Railway ...			
(*d*) East London Railway Joint Committee ...			
(*e*) Great Northern & London & North Western Joint Committee ...			
(*f*) Grangemouth Branch Railway ...			
(*g*) Great Western & Great Central (Banbury Junction Railway) Joint Committee ...			
(*h*) Halifax & Ovenden Joint Committee ...			
(*i*) Halifax High Level Joint Committee ...			
(*j*) Hammersmith & City Railway Joint Committee ...			
(*k* London Midland & Scottish & Great Western Joint Committee (Representing other Joint Lines of the two Undertakings) ...			
(*l*) Metropolitan & London & North Eastern Railways (Watford Joint Railway) Committee			
(*m*) Mid Nottinghamshire Joint Railways ...			
(*n*) Otley & Ilkley Joint Railway ...			
(*o*) Princes Dock Branch Joint Railway ...			
(*p*) Swinton & Knottingley Joint Line ...			
(*q*) Tottenham & Hampstead Joint Line ...			
(*r*) West London Extension Railway Company ...			
Total ...	£39,903,553		£43,468,705

APPENDIX B

Excluded Undertakings

The railway companies' interest in road transport undertakings authorised by Section 11 of the Road Transport Acts, 1928, of the amalgamated railway companies except (*a*) the interest of the London Midland & Scottish and the London & North Eastern Railway Companies in the Sheffield "C" Omnibus Services and (*b*) the interest of the London & North Eastern Railway Company in the Gainsborough Omnibus Service.

The railway companies' interest in air transport undertakings authorised by Section 8 of the Air Transport Acts 1929 of the amalgamated railway companies.

The Northern Counties Railway (Ireland)—owned by the London Midland & Scottish Railway Company.

The London Midland & Scottish Railway Company's financial interests in the following Irish Undertakings :—

The County Donegal Railways Joint Committee.
The Dundalk, Newry & Greenore Railway Company.
The Great Northern Railway Company (Ireland).
The Great Southern Railways Company.

The amalgamated railway companies' interest in the following undertakings :—

David MacBrayne Limited.
MacBraynes Trust Limited.
Wilson's & N.E.R. Shipping Co., Ltd.
Humber Graving Dock & Engineering Co., Ltd.
Penarth Pontoon, Slipway & Ship Repairing Co. Ltd.
Sheffield & South Yorkshire Navigation Company.

APPENDIX C

Standard Revenues for the purposes of Article 14

Name of controlled Undertaking	Amount
	£
1 Southern Railway Company	7,095,870 (*a*)
2 Great Western Railway Company	8,466,560 (*a*)
3 London Midland & Scottish Railway Company	20,579,930 (*a*)
4 London & North Eastern Railway Company	15,216,735 (*a*)
5 London Passenger Transport Board	5,493,881 (*b*)
6 East Kent Light Railway Company	4,732 (*c*)
7 King's Lynn Docks & Railway Company	7,666 (*c*)
8 Mersey Railway Company	145,422 (*c*)
9 Shropshire Railways Company	1,172 (*c*)

NOTES

(*a*) The standard revenue and allowances ascertained from time to time in accordance with the provisions of the Railways Act, 1921, and the principles laid down by the Railway Rates Tribunal and set out in its Judgment of July 18, 1939.

(*b*) A net revenue representing interest in full on London Transport prior charge stocks and 5½ per cent. on London Transport "C" Stock.

(*c*) The minimum amount of the company increased proportionately to the difference between the minimum amounts and the standard revenues of the controlled undertakings numbered 1-5 in this Appendix.

APPENDIX D

Air Raid Precautionary Measures

The parties to the respective agreements of January 11 and 16, 1939, in regard to air raid precautionary measures have agreed that such agreement shall be modified and extended in the following respects :—

(1) On November 1, 1941, each undertaking will refund to the Minister the total of the sums paid to it by way of grant under Section 40 of the Civil Defence Act, 1939, in respect of emergency repair stores, sanction for the purchase of which had been given at a cost not exceeding £1,392,300, and no further grant in regard thereto shall be paid by the Minister. The refund of such sum shall not be a charge to the expenditure of the undertakings for the purposes of the net revenue account. The stores shall become the property of the undertaking and be chargeable to the appropriate accounts (including, where necessary, the net revenue account) in the normal manner as and when issued for use.

(2) After deducting the £1,392,300 from the maximum grant of £4,000,000 which the Minister was prepared to make under the said Section 40, the balance amounting to £2,607,700, shall be paid to the undertakings in respect of approved expenditure on measures approved for grant as follows :—

	£
London Midland & Scottish Railway	796,700
London & North Eastern Railway	550,200
Southern Railway	362,550
Great Western Railway	340,550
London Passenger Transport Board	557,700
	£2,607,700

(3) Statements of approved expenditure absorbing each of the above amounts shall be prepared and agreed on the basis of the dates of authorisation of the respective works.

The undertaking concerned shall make such payments to H.M. Government as fall to be made in accordance with the provisions of Section 40 (4) of the Civil Defence Act, 1939.

(4) Expenditure on approved works in excess of the amounts mentioned in paragraph (2) shall be chargeable to the net revenue account over the 39 four-weekly periods immediately following the four-weekly period in which such expenditure took place.

(5) The net expenditure (other than day-to-day expenditure on maintenance and operation) incurred each four weeks by an undertaking in carrying out any other air raid precautionary measures in respect of its controlled undertaking either before the control period in anticipation of the present emergency or during the control period shall be spread over the succeeding 39 four-weekly periods, provided that stores (other than those referred to in paragraph (1) above) and movable equipment provided in anticipation of the present emergency are to be regarded as stocks issued on September 1, 1939, and the cost spread over the next succeeding 39 four-weekly periods.

(6) The expenditure referred to in paragraphs (4) and (5) to be charged during the period of control shall be shown as a separate item in the net revenue accounts.

(7) The prior approval of the Minister shall be obtained as regards any measure estimated to cost £1,000 or more proposed after August 13, 1941, similar to the measures referred to in paragraphs (3), (4) and (5).

(8) The terms of the agreements of January 11 and 16, 1939, as now modified will dispense with the assessment of residual values consequent upon the above expenditure.

August 13, 1941

APPENDIX E

Circular letter to Government Departments

T.C. No. 7/40

TREASURY CHAMBERS,
June 1, 1940

SIR,

GOVERNMENT CONTROL OF RAILWAYS

SETTLEMENT OF RAILWAY COMPANIES' ACCOUNTS BY GOVERNMENT DEPARTMENTS

1. I am directed by the Lords Commissioners of His Majesty's Treasury to state that in view of the Government Control of certain Railway Companies and of the London Passenger Transport Board as from September 1, 1939, They have had under consideration the question of payments by Government Departments, in respect of services rendered to them by such companies or the Board outside their ordinary functions of transportation, *e.g.*, construction of engineering works, the supply or manufacture of stores or plant, or the exclusive use by a Government Department of railway property.

Their Lordships have been in communication with the Ministry of Transport and they now request that the following procedure may be observed. (Reference to the railway companies in this instruction includes reference to the London Passenger Transport Board.) It should, however, be understood that the instructions of this circular in no way relieve Departments of their obligation to obtain Treasury authority for specific schemes.

2. It is intended that all charges for *services rendered* by the railway companies to Government Departments should be on an economic basis. In the case of *charges for use of property* (*e.g.*, steamers, hotels, and other premises, etc.) payments should be based on the principles of the Compensation (Defence) Act, 1939, as though the property had been requisitioned under Defence Regulations. The negotiations for all such charges for services and use of property should be conducted by Departments, who should make payment to the railway company concerned.

In view of the financial arrangements for the Government Control of Railways it is necessary for Departments to advise the Ministry of Transport of the terms of any agreement arrived at which may involve expenditure by the railway companies, or payment to them (other than for transportation services) by the Departments.

3. *Provision of additional railway facilities.*

Except in the case of works of which the estimated cost does not exceed £5,000 (see sub-paragraph (*b*) below) the Minister of Transport will arrange with the railway companies for the construction of any sidings, platforms, or other accommodation that may become necessary for Naval, Military, Air Force, or any other Government purposes ; such works will not be undertaken on behalf of the Government without his written authority.

The details of each scheme will, however, first be settled with the railway company by the Department concerned who will forward plans and estimates to the Ministry of Transport with a request for the work to be ordered.

The following procedure and method of payment should be adopted by the Departments in this connection.

(*a*) *Works estimated to cost* £5,000 *or over.*

(I) Preliminary arrangements will be made with the railway company by the Department concerned, notification that the works are contemplated, with a very brief description being sent to the Ministry of Transport at the outset. If the Minister is satisfied that the works can be carried out without detriment to others contemplated or in progress, the Department concerned will furnish him with full particulars, including a site plan showing the proposed railway facilities in detail and an estimate of cost.

(II) The order to proceed with the work will be issued by the Ministry of Transport to the Railway Executive Committee. Any important addition to, or deviation from the original scheme will similarly be ordered by the Ministry of Transport at the request of the Department concerned.

(III) When the work is completed the company will submit to the Ministry of Transport a detailed account, *in triplicate*, of the expenditure incurred, supported by a certificate in the form set out in the Appendix hereto. Two copies of the account will be sent by the Minister to the Department concerned and payment will be made by the Department to the railway company concerned; the remaining copy will be retained by the Ministry of Transport.

(IV) The Department concerned will advise the Ministry of Transport if the amount paid to the company differs from that claimed in the account submitted.

(*b*) *Works estimated to cost less than* £5,000.

(I) Departments will make their own arrangements and place the order direct with the Railway Executive Committee or with the company by which the work is to be executed.

(II) When the works have been ordered the Department concerned will forward particulars to the Ministry of Transport giving brief details of their extent and purpose, and of the estimated cost; these should be illustrated by a small scale plan as a rule, though this may not be necessary for trifling works; alterations to the original project will be treated similarly.

(III) Completion certificates and accounts supported by a certificate in the form set out in the Appendix will be submitted direct to the Department and payment will be made by the Department to the railway company concerned.

(IV) The Department concerned will inform the Ministry of Transport that the Order has been completed and send a copy of the account as settled.

(*c*) *Works ordered prior to September* 1, 1939, *but completed subsequent to that date.*

Departments will inform the Ministry of Transport that the Order has been completed and send a copy of the account as settled; the Ministry should also be notified of all payments made during the period of control in respect of these works.

(*d*) *Payments on account.*

Advance payments of an amount equal to 50 per cent. of the estimated cost of the work should be made to the railway companies when the order is given for engineering works, such as siding facilities, and a further payment on account should be made, which with the original payment of 50 per cent. of the estimated cost would represent 90 per cent. of the actual cost of the work when it has been completed. The balance should be paid as soon as the final account has been agreed.

4. *Record of goods supplied and services rendered.*

For the purposes of record Departments should furnish the Ministry of Transport with copies of all accounts paid by them to the railway companies in respect of goods supplied or services rendered, other than those which are clearly transportation services.

5. *Traffic Accounts.*

Departments are reminded that accounts with the railway companies should be settled promptly and every endeavour should be made to make the necessary payments in respect of the monthly traffic accounts within 21 days from the date of receipt. All such accounts as rendered to be paid in full, any apparent overcharges being left for adjustment in a subsequent account.

I am,

Your obedient Servant,

R. V. NIND HOPKINS.

APPENDIX TO FOREGOING LETTER

Certificate to be given by railway companies in respect of Government Works ordered by the Minister to be carried out during Control, and for Works done for other Government Departments during Control. (See paragraphs 3 (*a*) (III) and 3 (*b*) (III).)

(1) The whole of the amount in respect of which the claim is made relates exclusively to the work performed.

(2) The charges do not include any amount paid, or being paid, elsewhere by the Government to the company.

*(3) The charges include only (*a*) the cost of material at current prices, (*b*) labour at actual cost, (*c*) engine hire when normally chargeable, and (*d*) overheads.

(4) The charges other than the direct charges referred to under (*a*) and (*b*) above are being credited to the pooled expenditure.

(5) In the case of articles purchased from sub-contractors the price charged is the cost paid to the sub-contractor.

*(6) All scrap material recovered has been credited at current market prices and serviceable material at prices reasonably proportionate to the current price of similar new material.

*NOTE :

In the case of the construction of works ordered by the Minister, the certificate shall be modified by the substitution of the following paragraphs for those at (3) and (6) above :—

(3) The charges include only (*a*) the cost of material, i.e., at the company's book stock prices for new or second-hand material drawn from stocks and/or at purchase price less cash discount for material specially purchased for the work ; (*b*) labour at actual cost ; (*c*) engine hire when normally chargeable ; and (*d*) overheads.

(6) All serviceable and scrap material recovered has been credited at the company's book stock prices.

THE TREASURY SOLICITOR, MINISTRY OF WAR TRANSPORT,
BERKELEY SQUARE HOUSE, BERKELEY SQUARE, LONDON, W.1. *April* 13, 1942.

DEAR SIR,

RAILWAY CONTROL AGREEMENT

In drafting the Railway Control Agreement it was agreed between the Amalgamated Companies, the London Passenger Transport Board, and the Minister that their understanding on the following points arising out of that Agreement should in so far as they properly relate to the subject matter of the Agreement be placed on record by an interchange of letters :—

(*a*) *Article* 15 (1)—*Accounting period of less than one year.*

The calculation of the gross traffic receipts pursuant to Article 15 (1) will be made in manner following, namely, so far as the Amalgamated Railway Companies are concerned, the gross traffic receipts will be calculated on the basis of the gross traffic receipts for the years 1935, 1936, 1937 as shown for comparative purposes in the weekly published Traffic Returns for the years 1936, 1937, and 1938 and so far as the London Passenger Transport Board is concerned the gross traffic receipts will be calculated on the basis of the weekly passenger takings as published for the year ended June 30, 1939.

(*b*) *Article* 21 (*ii*) (*b*) and (*c*)—*Trust Funds.*

The intention of these two sub-paragraphs is that on the one hand the provisional revisions shall be approximately correct and on the other hand the payments shall be reasonable prompt. The undertakings will therefore submit to the Minister proposed revisions with detailed particulars compiled in accordance with the rules (the Minister to be satisfied with such details, and such investigation of them, as are necessary to demonstrate within reasonable probability the approximate correctness of the proposed revisions).

(*c*) *Article* 13 (1)—*War Damage.*

The amount taken in respect of war damage of the controlled undertakings for the purpose of ascertaining the figures set out in Command Paper No. 6252 of 1941 is £1,684,127.

(*d*) *Article* 26—*Air Raid Precautionary Measures.*

(i) It is understood that the Amalgamated Railway Companies and the Transport Board will continue to maintain such stocks of emergency repair stores as may be agreed with the Minister from time to time to be necessary until such time as it may be decided to be unnecessary any longer to hold special stocks (*vide* paragraph 2 (*e*) of the January, 1939, Agreements) in so far as conditions of supply permit.

(ii) It is understood that as regards repayments due under section 40 (4) of the Civil Defence Act, 1939, the controlled undertakings are prepared to make payments on account, and not withhold payment until their net revenues have been finally ascertained.

(*e*) *Article* 29—*Procedure of Rules Committee.*

It is understood that the Rules Committee, in setting up their procedure, will make the following provisions :—

(i) that for the purposes of paragraph (2) of Article 29 the decision of the Rules Committee must be a unanimous decision. If a unanimous decision cannot be reached as to the making of any particular rule or rules the question shall be settled by discussion between representatives of the Minister and the controlled undertakings, the representatives not to exceed four in number of which two may be nominated by the Minister and two by the General Managers' Conference : Provided that any such failure to reach a unanimous decision shall not be a reason for postponing the coming into operation or the discussion of any other rule ;

(ii) that, for the purposes of paragraph (3) of Article 29, in the event of the Rules Committee failing to reach agreement the individual votes of its members shall be recorded.

(f) Prior consent of Minister to large contracts for work or supplies on maintenance account.

It is understood that all contracts entered into after the execution of the Railway Control Agreement, with outside parties for works affecting repair and renewal of the assets of the controlled undertakings, during the control period and a period of three years thereafter will be subject to the prior consent of the Minister if the value of any such individual contract (or, where such contracts are entered into in pursuance of a programme and are divided between several contractors, the aggregate value of such contracts) is more than £10,000.

The Minister during the control period and a period of three years thereafter may by notice in writing require that from the date of such notice contracts for the supply of any of the materials scheduled in Appendix A to this letter shall during but only during such periods aforesaid be subject to his prior consent if the value of any such individual contract (or, where such contracts are entered into in pursuance of a programme and are divided between several contractors, the aggregate value of such contracts) is more than £10,000.

All proposals for contracts for work or supplies falling within this arrangement will be submitted to the Minister for his approval at the earliest practical date, and his approval shall not be unduly delayed.

(g) Variations in costs of labour and materials, etc.

The Controlled undertakings shall keep a record, for each half year of control, of variations in costs of labour and materials, etc.

Will you kindly let me know that the Amalgamated Companies and the Transport Board concur in the terms of this letter ?

THE CHIEF LEGAL ADVISER,
4, Cowley Street, S.W.1.

Yours faithfully,
(sd.) E. V. THOMPSON,
for The Treasury Solicitor.

APPENDIX A

Principal Maintenance Materials and Commodities

Iron and Steel.

Rails.
Iron pig
,, bars.
Castings including chairs.
Steel plates and sheets.
,, bars and sections.
,, billets and blooms
,, tyres.
,, axles.
,, wheel centres.
,, wheels, solid.
,, boiler tubes.
,, fishplates.
,, chair bolts, screws, and fangbolts.
,, parts for wagons.
,, switches and crossings, and special track work for trams.
,, springs.

Non-Ferrous Metals.

Copper plates and rods.
,, bar.
,, tubes.
Tin block.
Trolley wire.

Timber.

Sleepers and crossing timbers.
General.

Miscellaneous.

Accumulators, accumulator parts, etc.
Ballast and chippings.
Brake and clutch liners.
Cable.
Cement.
Creosote.
Fire bricks.
Indiarubber springs.
Leather cloth (including rexine).
Linseed oil.
Moquette and other seat coverings.
Pneumatic tyres.
Road vehicle engine parts and chassis.
Wagon cover canvas.

THE CHIEF LEGAL ADVISER,
LONDON & NORTH EASTERN RAILWAY,
4, COWLEY STREET,
WESTMINSTER, S.W.1.
April 20, 1942.

DEAR SIR,

RAILWAY CONTROL AGREEMENT

I have to acknowledge the receipt of your letter of April 13 and in reply thereto I am able to inform you that the Amalgamated Companies and the London Passenger Transport Board concur in the terms of that letter.

Yours faithfully,
(*sd.*) I. BUCHANAN PRITCHARD.

THE TREASURY SOLICITOR,
MINISTRY OF WAR TRANSPORT,
BERKELEY SQUARE HOUSE,
BERKELEY SQUARE, W.1.

APPENDIX 4

MEMBERS OF THE RAILWAY TECHNICAL COMMITTEE ON AIR RAID PRECAUTIONS

Mr. V. M. Barrington-Ward, D.S.O. (Chairman)	L.N.E.R.
Mr. H. A. Strutt, C.V.O. Col. A.J.G. Bird, C.I.E., D.S.O.	Home Office
Lt.-Col. Sir Alan Mount, C.B., C.B.E. Co. A.H.C. Trench, C.I.E.	Ministry of Transport
Mr. G. S. Hussey, M.B.E., M.C. Captain J.O.N. Wood, R.N.	L.M.S.R.
Mr. F. H. D. Page, O.B.E. Mr. Gilbert Matthews	G.W.R.
Lt.-Col. G. L. Hall, O.B.E. Mr. H.E.O. Wheeler, O.B.E.	S.R.
Mr. F. G. Maxwell Mr. H. J. Green, O.B.E. Mr. A. L. Lunn Mr. E. H. Beal Mr. H. L. Buckman	L.P.T.B.
Mr. T. S. Roberts (Secretary)	L.N.E.R.

APPENDIX 5

MEMBERS OF THE COMMITTEE OF INQUIRY INTO RAILWAY EMERGENCY LIGHTING RESTRICTIONS

Mr. V. M. Barrington-Ward, D.S.O., (Chairman)	L.N.E.R.
Mr. H. A. Strutt, C.V.O.,	Home Office
Col. A. H. C. Trench, C.I.E.,	Ministry of Transport
Air Commodore G. H. Mills, D.F.C.	Air Ministry
Lt.-Col. G. L. Hall, O.B.E.	S.R.
Captain J. O. N. Wood, R.N.	L.M.S.R.
Mr. M. G. Bennett	L.M.S.R.
Mr. F. H. D. Page, O.B.E.	G.W.R.
Mr. E. T. Brook, C.B.E.	L.P.T.B.
Mr. T. S. Roberts (Secretary)	L.N.E.R.

APPENDIX 6

SPECIFICATION FOR REDUCED FORM OF LIGHTING AT STATIONS AND YARDS

CATEGORY B (FULLY RESTRICTED)

(1) SCREENING

All lamps should be screened so that no direct light is visible above the horizontal plane, and, if possible, for about 10 degrees below that plane.

(2) COLOUR

The illumination of the ground should have no perceptible colour, and lamps giving a light between blue and green are generally recommended.

(3) INTENSITY OF ILLUMINATION

The direct intensity of illumination at ground level, or on any surface visible from the air, should not exceed 0·002 (two thousandths) foot candles, as measured by a suitable photometer.

(4) TYPE OF BULB

These should preferably be internally sprayed with a dye which suffers no deterioration in colour during the natural life of the bulb.

APPENDIX 7

GENERAL SPECIFICATION FOR TRAIN LIGHTING, BOTH STEAM AND ELECTRIC

(1) NUMBER AND TYPE OF LAMPS

Each compartment should be fitted with a single bulb of approximately 10 c.p., shrouded with a metal cylinder having an opening at its base not exceeding ⅞ in. diameter. Lights in corridors and lavatories should be treated similarly.

Open stock to be fitted in the same proportions as compartment stock.

(2) INTENSITY OF ILLUMINATION

This should not exceed 0·006 foot candles as measured at the level of the seating surface.

(3) Bowl Fittings

Where tin shrouds cannot conveniently be fitted, as in bowl and similar fittings, the bowls must be lined with opaque paper, having an opening not exceeding ⅞ in. diameter immediately below the bulb. One bulb only is permissible per bowl, and this must be as described in clause (1) above.

Note : Passenger stock and goods brake vans, lit by gas, must have the lighting modified so as to produce, as nearly as possible, similar results to that described above.

APPENDIX 8

A.R.P. MEASURES—CONDITIONS ATTACHED TO GOVERNMENT GRANT OF £4,000,000, JANUARY, 1939

(*a*) The companies will carry out the agreed measures immediately and to the Minister's satisfaction.

(*b*) In the event of war and the railways being controlled by the Government on terms as to compensation which allow of net revenues accruing to the companies in excess of those of a determined base (pre-war) period, the Companies shall repay out of any such excess accruing to them one half of the cost of precautionary measures financed by the Government.

(*c*) If war does not occur or if the terms of compensation for control in war restrict the companies to their base period net revenues, there will be no recovery except as to repair stores brought into use, see below sub-paragraph (*e*).

(*d*) Plant, materials, or equipment provided at the cost of the Exchequer shall, pending the payment by the companies of a 50 per cent, contribution, remain the property of the Government and shall meanwhile be stored, maintained and kept in good order by the companies at their own cost.

(*e*) If the purchase of special stocks of repair stores is financed by the Government, stocks shall be maintained by the companies at the enhanced level agreed until such time as it may be decided to be unnecessary any longer to hold special stocks. On this decision being reached the special stocks will be absorbed into use by the railways and appropriate sums credited to the Government in respect of their value.

(*f*) Suitable arrangements shall be made by the companies for co-ordinated purchase, distributed storage, and turnover. In connection with large purchases it will be desirable that the Board of Trade should be consulted as to the placing of orders so as to avoid competitive price increases.

(*g*) The sanction of the Minister of Transport shall be required to the carrying out of all measures other than "good employer" precautions. The companies shall, unless otherwise agreed, seek such sanction by submissions made by them after consideration of the recommendations of the Railway Technical Committee, or the Committee of Enquiry into Railway Emergency Lighting Restrictions. The companies shall satisfy the Minister that the expenditure is reasonable in amount and has been properly incurred in accordance with his sanction and shall from time to time furnish him with such accounts and vouchers and afford such facilities for inspection as he may require.

APPENDIX 9

A.R.P. MEASURES — ALLOCATION OF GOVERNMENT GRANT OF £3,250,000 TO MAIN LINE COMPANIES

	L.M.S. £	*L.N.E.* £	*G.W.* £	*S.R.* £	*Total* £
(*a*) Administrative and Control Centres	267,600	199,600	110,000	130,100	707,300
(*b*) Signal Boxes	245,000	112,700	81,700	80,000	519,400
(*c*) Power and Sub-stations ..	73,000	10,000	6,000	41,000	130,000
(*d*) Civil Engineer : Emergency stores (3 months' supply)	119,000	78,000	61,000	60,000	318,000
(*e*) Signal & Telegraph : Emergency stores (12 months' supply)	317,000	205,500	118,000	101,500	742,000
(*f*) Chief Mechanical Engineer : Emergency stores (loco. parts, 3 months' supply) ..	140,000	—	—	—	140,000
(*g*) Lighting Restrictions ..	85,000	70,000	45,000	50,000	250,000
(*h*) Extra protection for essential staff at certain vital yards, depots, etc. ..	113,100	88,500	50,600	34,350	286,550
	£1,359,700	764,300	472,300	496,950	3,093,250

ADD :

(*i*) 12 35-ton steam breakdown cranes	120,000
(*j*) Welding and burning plant	10,000
(*k*) Emergency telephone connections with G.P.O. circuits	25,000
(*l*) Improved hydraulic plant at Brentford Docks (war-time coal supplies)	1,750
	£3,250,000

APPENDIX 10

ADDITIONAL A.R.P. EXPENDITURE

	Amount covered by Government grant £	*Estimated additional expenditure* £	*Total expenditure estimated* £
Shelter protection for staff (inc. signalmen) ..	211,060	1,855,048	2,166,108
Signal boxes	519,400	205,803	725,203
Protection of administrative centres and other vital points	737,300	279,504	1,016,804
Stocks of material for emergency repairs ..	1,310,000	155,000	1,465,000
Lighting Restrictions	268,170	834,874	1,103,044
Protective equipment for staff		692,477	692,477
Air raid spotters		168,250	168,250
Cleansing and other squads		177,800	177,800
Fire fighting		321,245	321,245
Removal or protection of glass		1,000,000	1,000,000
Movement of trains through gassed areas ..		55,482	55,482
Alternative electricity supplies		408,736	408,736
Power station protection—main-line cos. ..	130,000		130,000
Breakdown cranes and other plant	156,750		156,750
Balance of Government grant to L.P.T.B., not included in the above figures	567,320		567,320
	£4,000,000	6,154,219	10,154,219

APPENDIX II

FASTEST AND AVERAGE TIMES AND FREQUENCY OF SERVICE BETWEEN LONDON AND VARIOUS PROVINCIAL CENTRES IN 1918, 1938, 1939, 1940, 1942, AND 1943.

London and	Distance	Fastest times						Number of trains daily						Average times					
		Oct. 1918	Oct. 1938	Oct. 1939	Feb. 1940	Oct. 1942	Oct. 1943	Oct. 1918	Oct. 1938	Oct. 1939	Feb. 1940	Oct. 1942	Oct. 1943	Oct. 1918	Oct. 1938	Oct. 1939	Feb. 1940	Oct. 1942	Oct. 1943
	Miles	h.m.	h.m.	h.m.	h.m.	h.m.	h.m.							h.m.	h.m.	h.m.	h.m.	h.m.	h.m.
G.W.R.																			
Bristol	118·3	2·15	1·45	2·35	2·30	2·30	2·30	16	20	14	18	18	18	2·45	2·15	2·58	2·51	3· 4	3· 5
Cardiff	145·1	3·10	2·41	3·15	3· 3	3· 3	3·13	10	14	8	12	8	8	3·23	2·55	3·23	3·16	3·27	3·33
Penzance	305·0	7·55	6·30	8·35	7·30	7·50	7·50	6	9	6	6	6	6	9·11	7·18	9·35	8·17	8·48	8·49
L.M.S.R.																			
Birmingham	112·9	2·40	1·55	2·41	2·24	2·24	2·24	11	20	15	18	16	16	2·53	2· 5	3·10	2·51	2·52	2·52
Glasgow	401·4	9·30	*6·30	9·35	8·45	8·50	8·50	6	12	6	6	9	9	10·20	8· 6	10·4	8·53	9· 6	9·7
†Manchester	188·5	4·35	3·15	4·32	3·50	4· 6	4· 5	16	22	14	18	18	18	5·10	3·43	4·52	4·34	4·54	4·53
L.N.E.R.																			
Edinburgh	392·7	9·45	*6· 0	9·45	8·35	8·35	8·35	3	8	3	4	3	5	10·15	7·55	10·36	9·25	9· 7	9·13
Hull	196·9	4·55	3·30	5·20	4·35	4·42	4·37	10	14	5	14	12	13	5·29	4· 6	5·32	5· 6	5·33	5·35
‡Nottingham	126·5	2·27	2·16	3·17	3· 7	3·18	3·18	16	18	12	17	16	17	2·57	2·38	3·36	3·22	3·36	3·38
S.R.																			
Bournemouth	107·9	2·39	1·56	2·30	2·15	2·20	2·20	12	26	17	18	18	18	2·52	2·33	3· 4	2·58	2·51	2·51
Brighton	50·9	1·15	1· 0	1· 0	1· 0	1· 0	1· 0	34	100	46	53	45	45	1·30	1· 9	1·11	1·11	1·11	1·11
Salisbury	83·8	1·43	1·26	1·48	1·42	1·43	1·43	15	26	16	17	16	14	2·15	2· 2	2· 8	2· 3	1·58	2· 2

* By streamline train
† *via* Western and Midland routes
‡ *Via* G.N. and G.C. routes

APPENDIX 12

STATEMENT SHOWING THE NUMBER OF SPECIAL TRAINS WORKED BY THE RAILWAY COMPANIES ON BEHALF OF THE GOVERNMENT DURING THE WAR

Trains handled by more than one railway are separately counted by each railway.

	Number of Special Trains		
	Passenger	*Freight*	*Total*
September to December, 1939	4,952	3,330	8,282
1940			
January to March	3,456	2,419	5,875
April to June	9,383	6,135	15,518
July to September	5,331	6,700	12,031
October to December	6,071	5,634	11,705
Total for 1940	24,241	20,888	45,129
1941			
January to March	4,598	5,574	10,172
April to June	4,298	5,880	10,178
July to September	5,800	6,460	12,260
October to December	5,224	7,421	12,645
Total for 1941	19,920	25,335	45,255
1942			
January to March	4,872	7,529	12,401
April to June	6,952	8,088	15,040
July to September	8,484	9,590	18,074
October to December	9,840	9,562	19,402
Total for 1942	30,148	34,769	64,917
1943			
January to March	9,229	9,487	18,716
April to June	9,587	10,457	20,044
July to September	11,961	12,136	24,097
October to December	16,604	13,503	30,107
Total for 1943	47,381	45,583	92,964
1944			
January to March	17,848	14,307	32,155
April to June	20,722	24,816	45,538
July to September	23,561	32,226	55,787
October to December	20,074	24,808	44,882
Total for 1944	82,205	96,157	178,362
1945			
January to March	19,747	25,567	45,314
April to June	20,784	21,715	42,499
July to August 11	9,246	6,591	15,837
Total for 1945 to August 11	49,777	53,873	103,650
GRAND TOTAL	258,624	279,935	538,559

APPENDIX 13

STATUTORY RULES & ORDERS
1939 No. 1085
EMERGENCY POWERS (DEFENCE)
RAILWAY WAGONS

NOTICE, DATED SEPTEMBER 3, 1939, OF THE MINISTER OF TRANSPORT REQUISITIONING PRIVATELY-OWNED RAILWAY WAGONS

1 The Minister of Transport by virtue of his powers in that behalf under the Defence Regulations, 1939 (*a*), hereby requisitions all privately-owned railway wagons other than those classes of railway wagons enumerated below.

2 The Minister directs that from the date hereof the power given to him under the said Regulations to use or deal with the wagons so requisitioned shall be exercised on his behalf by the Railway Executive Committee appointed by the Order of the Minister dated September 1, 1939.

3 In the absence of any directions to the contrary by the Railway Executive Committee, wagons the subject of this requisition which are already upon or may hereafter be brought upon the system of any railway company named in the above-mentioned Order of the Minister will be used interchangeably with railway-owned wagons in accordance with the directions of the Railway Executive Committee.

Wagons standing upon private sidings must be surrendered on demand by any such railway company as aforesaid, and such access to the private siding as may be necessary for their removal shall be given to the railway company, but until such demand is made they may be loaded and despatched as usual.

As from the date hereof wagon hire will be charged for the use of all wagons the subject of this requisition for traffics the existing conveyance rate for which does not include wagon hire.

4 In this notice—

" privately-owned " means in the ownership of some person other than a railway company or light railway company ;

" railway wagon " means a wagon constructed for use and used on standard gauge railways.

Classes of railway wagons exempted from this requisition.

1 Tank wagons.
2 Wagons specially set apart for specific traffics such as :—
  Cement,
  Copperas,
  Lime (roofed wagons only)
  Night soil and sewage
  Nitre cake,
  Salt,
  Tarred materials.
3 Wagons not suitable for running on main lines.
4 Registered wagons reserved for internal use at collieries and works.
5 Specially-constructed wagons.
6 Wagons usually used for working over private railways only.
7 Wagons restricted to working of a particular portion of a railway company's line.

R. H. HILL,
Authorised by the Minister.

September 3, 1939

(*a*) S.R. & O. 1939 No. 927.

APPENDIX 14

Ref. ZR.3/8/8/1

MINISTRY OF TRANSPORT,
Metropole Buildings,
Northumberland Avenue,
London, W.C.2.
August 26, 1940.

SIR,

SHEETING OF TRAFFIC

I am directed by the Minister of Transport to refer to previous correspondence and to enclose, for the information of the Railway Executive Committee, a copy of an Order which he has now made under the Defence Regulations on the above subject:

I am to ask the Committee to be good enough to direct the railway companies on his behalf as follows :—

1 (1) The railway companies shall not double-sheet any merchandise for conveyance by rail or accept for conveyance by rail any merchandise which is double-sheeted with railway companies' sheets.

(2) For the purpose of this direction double-sheeting means the use of two sheets where one of the sheets is of sufficient dimensions to cover the merchandise.

2 (2) When a Port Emergency Committee has served notice upon a railway company that it is necessary in order to clear the port that merchandise of any description, or situated in or upon any quay, transit shed, warehouse, or other place shall be conveyed immediately from the port by rail, the railway company shall convey the merchandise in open goods wagons and not covered by sheets in any case in which the provision of covered wagons or sheets would result in delay in the despatch of the merchandise from the port.

(2) The notice referred to in paragraph 2 (1) of this direction shall be in writing and shall be served upon an officer of the railway company designated by the company and indicated to the Port Emergency Committee by the Minister of Transport.

The Minister in confident that the fact that the Order gives the railway companies protection from claims for damage in certain circumstances when traffic is sent unsheeted from a port will in no way prevent the railway companies from doing their utmost to provide an adequate supply of sheets to the ports at all times. Furthermore, he has no doubt that, when it is necessary for traffic to go forward unsheeted from a port, the railways will do their best to ensure that such sheets as are available are used first of all for traffic which is likely to suffer most severely if sent unsheeted.

A copy of a circular letter which is being sent to the Port Emergency Committees on the subject is also enclosed for the Committee's information.

I am to request that the Minister may be furnished in due course with 12 copies of the direction as issued.

I am, Sir,
Your obedient Servant,

(Sgd.) GILBERT S. SZLUMPER,
Railway Control Officer.

The Secretary,
Railway Executive Committee,
LONDON, S.W.

MINISTRY OF TRANSPORT (C)
Metropole Buildings,
Northumberland Avenue,
LONDON, W.C.2

Z.12/301.

August 26, 1940.

DEAR SIR,

SHEETING OF TRAFFIC BY RAIL

The increase in traffic since the war began has created an increased demand for covered railway vans and sheets. The difficulty of obtaining raw materials has made it impossible to provide sufficient new vans and sheets to meet this demand in full. With the object of enabling the railways in cases of emergency to convey unsheeted from the ports traffic which is normally conveyed in covered vans or sheeted, the Minister has made an Order under the Defence Regulations and has issued a Direction to the railway companies of which a copy is annexed.

2 Briefly, the Order provides that the railway company sending forward traffic unsheeted in accordance with a direction of the Minister of Transport shall not be liable for claims for damage arising from the lack of sheeting.

The Direction that double-sheeting shall not take place is general; the Direction that traffic shall in certain circumstances be sent unsheeted is limited to those cases where a Port Emergency Committee has served notice upon the railway company that it is necessary in order to clear the port for certain traffic to be despatched forthwith.

3 The Railway Executive Committee will furnish a list of railway representatives in ports on whom the notice visualised in Paragraph 2 of the Direction shall be served by a Port Emergency Committee. This list will be circulated when received.

4 In view of the possibility of damage to goods sent unsheeted, Port Emergency Committees should serve notice on the railway companies only in cases in which there is real danger of acute congestion occurring if goods have to wait until an adequate supply of sheets is available.

Notice should not be served in cases where there is merely a day-to-day shortage of sheets.

Yours faithfully,

(Sgd.) ROBERT H. TOLERTON

To the Chief Executive of all Port Emergency Committees.

For information to :—

Dock & Harbour Authorities' Association,
Railway Executive Committee, and
General Managers of Great Western, Southern, London & North Eastern, and London Midland & Scottish Railway Companies.

STATUTORY RULES & ORDERS
1940 No. 1564
EMERGENCY POWERS (DEFENCE)
RAILWAYS

THE RAILWAYS (SHEETING OF TRAFFIC) ORDER, 1940, DATED AUGUST 26, 1940, MADE BY THE MINISTER OF TRANSPORT

In exercise of the powers conferred upon him by Regulation 56 of the Defence (General) Regulations, 1939 (*a*), and of all other powers enabling him in that behalf, the Minister of Transport hereby orders as follows :—

1 Notwithstanding any obligation imposed upon the railway companies by or by virtue of the Railways Act, 1921 (*b*), or any other Act or instrument determining their functions, merchandise shall only be carried by a railway company subject to the condition that the company shall not be liable for any damage caused thereto by reason of the fact that such merchandise is conveyed in open wagons and not covered by sheets (or is not double-sheeted as the case may be) if conveyance in such manner is necessary in order to comply with any directions issued to the railway companies by the Minister of Transport, and such condition shall apply to the carriage of any merchandise without any special contract in writing.

2 This Order may be cited as " The Railways (Sheeting of Traffic) Order, 1940 "

Signed by Order of the Minister of Transport this twenty-sixth day of August, 1940.

(Sgd.) H. W. W. FISHER
Authorised by the Minister

(*a*) S.R.&O. 1939 (No. 927).

(*b*) 11 & 12 Geo. 5 ch. 55.

APPENDIX 15

FREE PERIOD ALLOWED FOR LOADING AND UNLOADING RAILWAY WAGONS (INCLUDING REQUISITIONED WAGONS)

1 Wagons carrying merchandise, excluding (*a*) coal, coke, patent fuel, and (*b*) iron ore, ironstone, lime, or limestone for blast furnaces and steel works.

(In calculating the free periods set out below the term " day " means 24 hours beginning at 6 a.m. Sundays, Bank Holidays, and other *Dies Non* are not included).

	Arrangement in 1938 in England and Wales	Arrangement from March 1, 1940, in England, Wales, and Scotland
Before conveyance		
At stations	1 day	1 day
At private sidings, docks, and wharves	2 days	1 day
After conveyance		
At stations	2 days	1 day
At private sidings, docks, and wharves	3 days, if emptied	1 day, if emptied
	5 days, if reloaded	2 days, if reloaded
At ports (shipment traffic)	4 days	1 day

2 Wagons carrying (*a*) coal, coke, patent fuel, and (*b*) iron ore, ironstone, lime, or limestone for blast furnaces and steel works.

	Arrangement in 1938 in England and Wales	Arrangement from March 1, 1940, in England, Wales, and Scotland
Before conveyance		
At stations	1 day	1 day
At private sidings, docks, and wharves	2 days (applied only in N.E. Area, L.N.E.R., and on S.R.)	1 day (not applied at colliery sidings except in Scotland and N.E. Area)
After conveyance		
At stations and depots :—		
London	4 days	1 day
Barging depots, London	6 days	1 day
Elsewhere	3 days	1 day
Ports	No limit	1 day
(More stringent regulations applied in the N.E. Area and on the S.R. where 4 days were allowed on shipment traffic at ports)		(2 days were allowed at private sidings, docks, and wharves, on wagons returned loaded)

Demurrage Charges (per wagon per day) on Railway Wagons, including Requisitioned Wagons, after the specified Free Periods

1(A) Wagons carrying Merchandise as limited in (1)

	Charge in 1938	Charge from March 1, 1940
Ordinary Wagons	3s. 2d.	6s. 0d.
High-capacity wagons ..	From 4s. 2d. to 10s. 6d.	From 8s. 0d. to £1 1s. 0d.
Specially-constructed wagons	From 6s. 4d. to £1 1s. 0d.	From 12s. 0d. to £2 2s. 0d.
Refrigerator and insulated vans	12s. 7d.	£1 5s. 0d.

2(A) Wagons carrying (*a*) coal, coke, patent fuel, and (*b*) iron ore, ironstone, lime, or limestone for blast furnaces and steel works.

	Charge in 1938	Charge from March 1, 1940
Before conveyance		
At stations, depots, ports, docks, wharves, and private sidings other than colliery sidings	None, except in Scotland, the N.E. Area, and on the S.R., where charges varying from 1s. 7d. to 3s. 2d. were enforced.	Ordinary wagons 3s. 0d. High-capacity wagons from 4s. 0d. to 10s. 0d. (These charges applied at colliery sidings in Scotland and the N.E. Area).
After conveyance		
At stations, depots, ports, docks, wharves, private sidings, and barging places.	Demurrage not generally charged, except in Scotland, N.E. Area, and on the S.R., but siding rent at 6½d. per wagon per day charged in certain cases.	Ordinary wagons 3s. 0d. High-capacity wagons from 4s. 0d. to 10s. 0d.

(Note.—This statement does not purport to give more than a broad outline of the changes which took effect on March 1, 1940.)

APPENDIX 16

STATUTORY RULES & ORDERS
1942 No. 944

EMERGENCY POWERS (DEFENCE)

Docks and Harbours

The Control of Traffic (Removal from Ports) Order, 1942, dated May 26, 1942, made by the Minister of War Transport

In virtue of his powers under Regulations 56 and 74 of the Defence (General) Regulations, 1939, and of all other powers enabling him in that behalf, the Minister of War Transport (hereinafter called "the Minister") hereby orders as follows :—

1 The Port Emergency Committee for any of the ports named in the first column of the schedule hereto may, in any case in which it appears to them expedient for facilitating the flow of traffic at the port or for minimising the risk of damage by fire or enenmy action or otherwise for regulating, facilitating or expediting such traffic, direct the port authority to remove any goods from that port to the inland sorting depot situated at the place named in the second column of the schedule opposite the name of the port, and to sort and distribute such goods at that depot.

2 Where such removal is effected by rail, the railway undertaking concerned may charge against the port authority such flat rate per ton for the carriage of the goods as may be agreed between the railway undertaking and the port authority and approved by the Minister, and the provisions of the Railways (Charges for Government Traffic) Order, 1942, shall apply to such charges as if they were charges made in accordance with an agreement referred to in that Order.

3 The port authority may make such charges as may be approved by the Minister for services rendered in pursuance of this Order and such charge shall be in addition to any charges (not being charges for such services) which they would otherwise be authorised to make.

4 The port authority shall give security to the satisfaction of the Commissioners of Customs & Excise for the due removal of the goods from the port to the depot and for their safe custody at the depot.

5 This Order shall come into operation on the twenty-sixth day of May, 1942, and may be cited as "The Control of Traffic (Removal from Ports) Order, 1942".

The Schedule

Name of Port	*Place of Inland Sorting Depot*
Glasgow	Glasgow
Liverpool	Kirkby
Garston	,,
Manchester	,,
Avonmouth	Wapley Common
Swansea	St. Mellons
Port Talbot	,,
Barry	,,
Cardiff	,,
Newport	,,

Signed by the authority of the Minister of War Transport this twenty-sixth day of May, 1942.

S. S Wilson,
An Assistant Secretary.

APPENDIX 17

LIST OF RAILWAY OFFICERS WHO TOOK OVER GOVERNMENT CIVILIAN POSTS

	Government Civilian Post
Great Western Railway:	
Mr. A. S. Quartermaine, C.B.E., Chief Engineer	Director-General of Aircraft Production Factories, Ministry of Aircraft Production. (From June, 1940, to January, 1941).
London Midland & Scottish Railway:	
Sir Ernest J. H. Lemon, Vice-President (Retired)	Air Ministry, Ministry of Production
Sir Wm. A. Stanier, C.M.&E.E. (Retired)	Ministry of Production
Mr. S. J. Symes, Chief Stores Superintendent (Retired)	Ministry of Production
Mr. R. A. Riddles, Mechanical and Electrical Engineer, Glasgow	Ministry of Supply, Director of Transportation Equipment
Mr. P. R. Hickman, General Assistant, Chief Stores Superintendent's Department	Ministry of War Transport, Ships' Stores Organisation
Mr. F. A. Pope, Chief Commercial Manager	Regional Port Director, Calcutta
London & North Eastern Railway:	
Mr. W. McA. Gracie	Director of Infestation Control, Ministry of Food.
Mr. A. Forbes Smith	Deputy Director-General, Supply Serviees (Transportation, Ministry of Supply)
Mr. D. R. Edge	Wagon Repairs Adviser, Ministry of War Transport
Mr. A. E. English	Deputy Assistant Director, Ministry of Supply
Capt. R. Davis	In charge of Sea Transport Department, Ministry of War Transport
Mr. F. W. Corbet	Manager, Merchant Navy Pool, Montreal—Ministry of War Transport
Mr. G. S. Lindgren	Deputy Regional Commissioner, Midlands
Mr. W. D. Havelock, O.B.E.	Port Officer, Palsordi and Freetown, Ministry of War Transport.
Southern Railway:	
Mr. G. S. Szlumper, C.B.E.	Director-General Transportation & Movements, War Office Railway Control Officer, Ministry of War Transport
Mr. R. P. Biddle, C.B.E.	Deputy Director, Port & Transit Control, Ministry of War Transport
Mr. F. Gilbert	Controller of Factory Transportation; later promoted to Assistant Director-General, Supply Services, Ministry of Supply
Mr. S. G. Wood	Controller of Transportation Accounts, Ministry of Supply

APPENDIX 18

HONOURS CONFERRED UPON RAILWAY STAFF IN RECOGNITION OF THEIR RAILWAY WORK

(*Up to January* 1, 1946)

Great Western Railway

Award	Name	Railway post or grade
C.B.E. ..	Quartermaine, A. S. ..	Chief Engineer
O.B.E. ..	Morgan, H. W. ..	Dock Manager
	Page, F. H. D.. ..	Signal Engineer
	Peacock, H. J. ..	Assistant Superintendent of the Line
	Ford, L.E.	Chief Docks Manager
M.B.E. ..	Griffiths, C. H. ..	Chief Engineer *Great Western*
	Partridge, G. H. ..	Chief Inspector
	Webster, J. L.	Head of A.R.P. Department
	Cox, C. T.	Divisional Superintendent
	Dixon, R.	Assistant to Chief Docks Manager
	Pritchard, W. E. ..	Dockmaster
	Slater, Capt. E. H. ..	do.
	Nodder, H.	Assistant to Divisional Engineer
	Williams, J. R. C. ..	Stationmaster
	Ridd, J.	Police Superintendent
	Hoskins H. J. ..	District Goods Manager
	Savage, H.	New Works Assistant to Chief Engineer
	Smith, M. G. R. ..	Assistant to Chief Engineer
	Godfrey, S. J.	Head of Freight Train Running Section
B.E.M. ..	England, W.	Length Ganger
	Butland, J. I.	Inspector of Mechanics
	Howes, W. J.	Signal & Telegraph Inspector
	Harding, W. G. ..	Head of General Cargo Section
	Fisher, A. E.	Chief Foreman
	Gillingham, G. ..	Chief Dock Foreman
	Marshall, C. G. ..	Chief Office Inspector
	Madron, J. T.	Diver
	Barrett, J. A.	District Goods Inspector
	Bowen, F. P.	Chief Divisional Traffic Inspector
	Langston, T.	,, ,, ,, ,,
	Scanlan, W.	Chief Horse Foreman
	Gurney, J. V. H. ..	Station and Yard Master
	Battin, J. E.	Goods Foreman
	White, A. P.	District Goods Inspector
	Beaven, F.	Permanent Way Inspector
	Aubrey, W. H. ..	Head of Traffic Section (Docks)
	Porteus, J. F.	Engine Driver
	Gooderson, E. H. ..	Chief Shop Foreman
	Owen, S. J.	,, ,, ,,
	MacDonald, B. P. ..	Chief Dock Foreman
	Jenkins, A. G. ..	Inspector of Mechanics

Award	Name	Railway post or grade
B.E.M.—(*contd.*)	Morris, J. E.	Chief Divisional Traffic Inspector
	Lloyd, S.	District Goods Inspector
	James, F.	Engineer in Charge of Floating Crane
	Barratt, H. S. L. ..	Chief Carriage Shop Foreman
	Breakspear, J. ..	Permanent Way Inspector
	James, C. L.	Assistant Head of Traffic Section
	Pugh, S. T.	Locomotive Running Inspector
	Rogers, W.	Mechanical Foreman
	Warren, D. I.	Chief Foreman Locomotive Department
	Davenport, Miss C. ..	Clerk-in-Charge Telephone Enquiry Bureau
	Atrill, N. J.	Registered Port Transport Worker
	Watson, G.	District Goods Inspector
	Undey, H.G. ..	Checker
	Honeybone, F... ..	District Traffic Inspector
	Routley, W.	H.Q. Goods Train Inspector
	Duddridge, L. F. ..	Permanent Way Inspector
	Wheeler, A. J. ..	Detective Inspector
	Sullivan, R. H. ..	Station Inspector
	Steward, Miss M.C. ..	Telephone Exchange Supervisor
	Parnell, E. J.	Head Office Inspector
	White E. F.	Chief Boiler Shop Foreman

LONDON MIDLAND & SCOTTISH RAILWAY

C.B.E. ..	Darbyshire, G. L. ..	Vice-President
	Wallace, W. K. ..	Chief Civil Engineer
O.B.E. ..	Williamson, D. ..	Works Superintendent, Horwich
	Pugson, E.	Principal Assistant (C. & W.) to C. M. E. Derby
	Robinson, J. H. ..	Divl. Supt. of Operation, Manchester
	Peck, J. N., M.C. ..	District Civil Engineer, London
M.B.E. ..	Bird, L. G.	Chief Foreman, Erecting Shop, Crewe Loco. Works
	Calladine, A. C. F. ..	Assistant, Chief Operating Manager's Dept., Watford H.Q.
	Chaplin, C. J., B.Sc., A.M.I.C.E.	Actg. District Engineer, Derby South
	Catto, Helen	Chief Welfare Supt., (Women)
	Cowley, J. C., M.C., D.C.M.	Stationmaster, Crewe
	Dunkley, C. V. ..	Head of Out-of-Gauge Load Section Engineer's Department, Watford
	Harrison, J.	Stationmaster, Euston
	Harvey, R. F.	Asst. Operating Manager, Glasgow
	Holton, A. J.	Stationmaster, Lime Street, Liverpool
	Hussey, G. S., M.C. ..	Asst. to Vice-President
	Killingback, J. J. ..	District Controller, Fenchurch Street
	Montgomery, H. ..	Marine Supt., Stranraer Harbour
	Mottram, J. H. ..	Area Technical Assistant, Signal & Telegraph Dept., Rugby.
	Raven, F. C.	Senior Captain, L.M.S.R. Fleet of Steamers
	Robson, A. E... ..	Asst. Works Superintendent, Derby C. & W. Works

Award	Name	Railway post or grade
M.B.E.—(*contd.*)	Rankin, J.	Stationmaster, Glasgow
	Smith, E. E. (Miss) ..	Lord Stamp's Private Secretary
	Thomson, A. S. L. ..	Dock Superintendent, Garston
	Yeaman, A.	District Goods and Passenger Manager, Inverness
B.E.M. ..	Alton, J.	Head Office Inspector, Glasgow
	Bailey, P. M.	Ganger, Kettering
	Beynon, G. E.	Detective Inspector, Euston
	Charlesworth, A. ..	Passenger Yard Foreman, Crewe
	Clarke, T.	Passenger Yard Foreman, Manchester
	Cooper, F. G.	Ganger, Engineer's Department, Poplar
	Day, C.	Yard Foreman, Aintree
	Dex, C. E. R.	Goods Shunter, Toton Sidings
	Ellingham, F. G. ..	Ganger, St. Pancras
	Jones, W.	Boatswain, ss. *Cambria*
	Freestone, W. T. ..	Engine Driver, Camden
	Freshwater, J. J. ..	Telegraph Ganger, Barking
	Green, J.	Wagon Builder, Earlestown
	Harris, F. E.	Signalman, Saltley
	Hawkins, F.	Blacksmith, Wolverton
	Hobson, A.	Machinist, Derby
	Keightley, E.	A.R.P. Instructor
	Larkins, J.	Station Foreman, Nuneaton T.V.
	Law, J.	Works Inspector, Watford
	Leech, A.	Leading Hand Valve Setter, Crewe Loco. Works
	McKendra S. (Mrs.) ..	Chargewoman Concrete Worker, Mossend
	Mackerell, R.	Stationmaster, Larne
	Morris, G.	Goods Guard, Crewe
	Morrison, G. W. ..	Signalman Inspector, Wigan
	Nutty, J.	Fitter Grade 1, Derby
	Pemberton, J.	Chief Goods Foreman, Alexandra Dock, Liverpool
	Pollitt, H.	Chargehand Fitter, Loco. Works, Horwich
	Pratt, W. W.	Leading Fitter, Willesden
	Renshaw, F.	Signal Locking Fitter, Rugby
	Roberts, J.	Stoker, ss. *Cambria*
	Sherwood, B.	Chief Docks Inspector, Garston
	Staff, F. J.	Signalman, Barking
	Strong, R.	Passenger Guard, Carlisle
	Sullivan-Russell, J. J.	Fireman (qualified Driver)
	Thomas, J.	Joiner, Outdoor Machinery Section, Broad Street, London
	Thornley, A.	Forge Hammerman, Derby Loco. Works
	Ward, H. H.	Ganger, Plaistow
	Watson, G.	Yard Inspector, Aberdeen
	White, J.	Coppersmith, Wellingborough
	Whitehead, R. W. ..	Stationmaster, Old Dalby
	Whitefield, E.	Tool Fitter, Tool Room, St. Rollox, Glasgow
	Witheridge, A. T. ..	Fitter, Camden
R.V.S.M. ..	Wright, R.	Carter, Bristol
	Hill, E. A.	Dining Car Conductor
	Plummer, A. M. ..	Dining Car Cook

London & North Eastern Railway

Award	Name	Railway post or grade
O.B.E.	Ballan, L.	District Superintendent, Hull
	Parker, L. A.	Loco. Running Superintendent, Shenfield
	Peppercorn, A. H.	Asst. Chief Mechanical Engineer
M.B.E.	Bradley, E. S.	District Engineer, Hull
	Cooper, C.	Staff Assistant to Traffic Officers, York
	Craig, J. C.	Stationmaster, Edinburgh (Waverley)
	Cruddas, T. H.	Works Manager, Shildon Wagon Works
	Fletcher, B. P.	District Engineer, Stratford
	Goring, F. W.	Stationmaster, Kings Cross
	Gregory, C. J.	Stationmaster, Liverpool Street
	Johnston, G. M.	District Superintendent, Edinburgh
	Lambert, J. J.	Dredging Superintendent, Hull
	Lorimer, J.	District Goods and Passenger Manager, Dundee
	Margetts, F. C.	Trains Asst. to Supt., Gerrards Cross
	Peck, G. H.	Divisional Police Supt., Grimsby
	Sayers, H. G.	Asst. Superintendent, Edinburgh
	Smith, G.	Deputy Head of Central Traffic Office, Marylebone
	Stathers, J. M.	Dockmaster, The Hartlepools
	Thompson, Miss D.	Personal clerk to Chairman, R. E. C.
	Vipond, E. J.	Principal Asst. (Operating) Central Traffic Office, Marylebone
	Wadham, Miss P. E.	Personal Clerk to Divl. General Manager, Southern Area.
	Wilson, F. C.	District Superintendent, Stratford
B.E.M.	Ainger, E. E.	Stationmaster, Norwich Thorpe
	Alger, W. J.	Chief Signal and Telegraph Inspector, Stratford
	Allen, T. E.	Stationmaster, Darlington
	Barratt, Miss E. E.	Supervisor, Telephone Exchange, York
	Bayne, A. J.	Engine Driver, Dundee (Tay Bridge)
	Brentnall, E. G.	Asst. to Sig. & Tel. Engineer, Stratford
	Campbell, A.	Road Motor Inspector, Goods Manager's Office, Glasgow
	Farey, T.	Police Inpector, Hull
	Garner, E.	District Inspector, Northwich, C. L. C.
	Geeson, F. M.	Parcels Agent, Liverpool Street
	Gentles, T. A.	Chief Signalling Inspector, Newcastle
	Graham, J. E.	Engine Driver, York
	Hill-Bailey, R. J.	Chief Foreman, Millwrights and Hydraulic, Stratford
	Kirkby, C.	Permanent Way Inspector, Sheffield
	Lauder, D.	Millwright, Cowlairs Works
	Letham, W. L.	Engine Driver, Mallaig
	Lincoln, F.	Permanent Way Inspector, Stratford
	Love, H.	Works Supt., District Engineer's Department, York
	Lumsden, A.	Foreman, Aircraft Factory, Cowlairs
	McLean, C.	Chief Engineer, Clyde Steamer Service
	Maddison, T. B.	Machine Shop Foreman, Darlington Loco. Works
	Melbourne, H.	Chief Cartage Supervisor, Marylebone
	Nunn, H.	Yard Inspector, Holloway
	Nunn, W. H.	Controller, District Control, Darlington

Award	Name	Railway post or grade
B.E.M.—(*contd.*)	Parker, W.	Chargehand Fitter, Gorton Loco. Works
	Parkin, C. T.	Chief Foreman, Machine Shop, Doncaster Loco. Works
	Prior, H. G.	Toolroom Turner, Locomotive Works, Stratford
	Redgers, C.	Signalman, Barnet North
	Reed, G. M.	Chief Permanent Way Inspector, London
	Robinson, E. L. ..	Steelwork Inspector, Stratford
	Rose, D. E.	Yardmaster, Temple Mills
	Thompson, J. H. ..	Dist. Locomotive Superintendent, Aberdeen
	Tyrrell, E. A.	Berthing Master, Lowestoft Harbour
	Waite, J. R.	Police Inspector, Hull
	Walker, W. E. ..	Crane Driver, King George Dock, Hull
	Williamson, L. A. ..	Chargeman Erector, Doncaster Loco. Works

Southern Railway

C.B.E. ..	Ellson, G.	Chief Engineer
O.B.E. ..	England, W. J. ..	Supt. of Operation
	Gribble, C.	Deputy Chief Civil Engineer
	Nunn, P.	Divisional Traffic Superintendent
	Richards, R. M. T. ..	Traffic Manager
M.B.E. ..	Bridger, J.	Stationmaster
	Chapman, A. T. ..	,,
	Cogger, R.	Outdoor Assistant (Signal & Telegraph)
	Crowe, W. T. J. ..	Clerk
	Elmes, A. J.	Asst. to General Manager
	Fitch, S. A.	General Purposes Asst. to General Manager
	Howard, F. L. ..	Ruuning Shed Superintendent
	Hunton, T.	Asst. for Outdoor Depots
	Lelew, H.	Actg. Asst. to Eastern Divl. Motive Power Supt.
	Liston, A. G.	Asst. to Supt. Engineer
	Maitland, J. P. ..	Running Shed Supt.
	Marshall, F. H. ..	Asst. London District Freight Superintendent
	Pepper, C. W.	Chief Rolling Stock Clerk
	Petherick, R. H. ..	Goods Agent
	Powell, A. E.	A.R.P. Officer
	Roach, F. T.	Stationmaster
	Thatcher, P. W. E. ..	Wharfinger
B.E.M. ..	Bennett, A. V. ..	Signal & Telegraph Supervisor
	Bennett, H. G. ..	Area Inspector
	Bolton, R.	Workshop Assistant
	Bowden, E. E. ..	Statiomaster
	Boxall, W. E.	Supervisor of Heavy Structures
	Bramble, E. C. ..	Permanent Way Supervisor
	Buckle, A.	Stationmaster
	Burt, H. J.	Supervisor of Heavy Structures
	Bushell, A.	Stationmaster
	Card, R. W.	Running Foreman

Award	Name	Railway post or grade
B.E.M.—(*contd.*)	Clark, S.	Ast. Charge Engineer
	Collins, P. G.	Stationmaster
	Cooper, Miss G. E. ..	Telephone Supervisor
	Cordwell, G.	Permanent Way Inspector
	Cutler, R. E.	Yard Master
	Dedman, J.	Stationmaster
	Doel, S.	Dry Dock Foreman
	Doorne, W. G. K. ..	Stationmaster
	England, C. W. ..	Goods Agent
	Evans, F.	Signal & Telegraph Supervisor
	Ford, H. C.	Stationmaster
	Gabriel, H. A.	Permanent Way Supervisor
	Garnett, B.	Supervisor of Steel Structures
	Garnett, E.	Supervisor of Brick Structures
	George, A.	Stationmaster
	Giles, G.	Chargehand Electric Welder
	Goffe, C. C.	Foreman
	Gutsell, F. J.	Aeroplane Spotter
	Hagger, A. E.	Head Office Inspector
	Harnden, A. R. ..	Stationmaster
	Harris, P. A.	do.
	Hatch, C. W.	Asst. Traffic Controller
	Hooper, W. H. ..	Permanent Way Supervisor
	Hover, W. J.	Supervisor of Steel Structures
	Howes, C. J.	Detective Inspector
	Jenvey, G. H.	Stationmaster
	Kallender, Miss G. ..	Deputy Telephone Supervisor
	Keep, F. W.	General Foreman
	Key, G. E.	Chief Carriage & Wagon Draughtsman
	Leach, C.	Stationmaster
	Lovelock, E. J. ..	Supervisor of Heavy Structures
	Mann, F. W.	S. & T. Supervisor
	Marsh, G. P. A. ..	Charge Engineer
	Matcham, G. W. ..	Area Inspector
	Minshall, G. A. ..	Permanent Way Supervisor
	Mumford, L. J. ..	Inspector
	Neat, R. G.	Running Shed Supt.
	Nicholson, G. L. ..	Locomotive Foreman
	Noble, B.	Wagonmaker
	Northcott, E. E. ..	Goods Agent
	Nunn, A. A.	Area Inspector
	Pearman, J. S. ..	Assistant P.W. Inspector
	Pecksen, A. A. ..	Area Inspector
	Puttock, F. E. T. ..	Goods Agent
	Read, E. G.	Locomotive Inspector
	Roberts, A. E. ..	Area Supervisor
	Scarfield, E. R. ..	Bodymaker
	Smith, C.	Drydock Foreman
	Soar, C. A.	Foreman
	Tagg, H. W.	Permanent Way Supervisoı
	Taylor, E. A.	Acting Locomotive Forema
	Unwin, H.	Superintendent Steward
	White, J.	Yardmaster
	Worsley, E.	Foreman

APPENDIX 19

HONOURS CONFERRED UPON RAILWAY STAFF IN RECOGNITION OF GALLANTRY ON THE RAILWAYS

(*Up to January* 1, 1946)

Great Western Railway

Award	Name	Railway post or grade
George Cross	Tunna, N.	Shunter
M.B.E.	Luen, B. A.	Assistant Dockmaster
	Campbell, N. W.	Wireless Operator
	Purcell, F. J.	Second Engineer
George Medal	Smout, P. F.	Engine Cleaner
	Blake, F. F.	Examiner
	Mahoney, P. J.	Checker
	Cox, F. D.	Telegraph Linesman's Assistant
	Davies, I. T.	Engine Driver
	Newns, F. R.	Engine Fireman
	Owen, Miss E. M.	Stewardess
B.E.M.	Clarke, J. E.	Yardmaster's Clerk
	Thomas, H.	Yard Inspector
	Weaver, W. E.	Cartage Foreman
	Cooper, G. W.	Horse Foreman
	Martin, F. E.	Dock Checker
	Anderson, J. N.	Dock Porter
	Pote, C. H.	Goods Shunter
	Swaffield, A. L.	Checker
	Morgan, W. C.	Cargo Foreman
	Saunders, F. E.	,, ,,
	Whelan, W. J.	Telephone Attendant
	Furneaux, B. G.	Shunter
	Griffin, C.	do.
	Hellings, P. B.	Clerk
	Penwill, T.	Carter
	Harris, F. J.	Parcel Porter
	Thomas, J. G.	Stableman
	Morgan, A.	Leading Auxiliary Fireman
Lloyd's War Medal	Campbell, N. W.	Wireless Operator, *St. Patrick*
	Purcell, F. J.	Second Engineer, *St. Patrick*
	Owen, Miss E. M.	Stewardess, *St. Patrick*

London Midland & Scottish Railway

George Medal	Cook, A.	Engine Driver
	Roberts, G.	Goods Guard
	Rycroft, A. J.	Goods Yard Inspector
	Simkiss, G. H.	Fireman
	Quinn, J.	Ganger
	Stubbs, H. N.	Fireman
B.E.M.	Fossey, J.	Detective Inspector
	Booth, J. W.	Goods Porter
	Brammall, J. G.	Porter
	Clarke, F. W.	Parcels Porter
	Cornwell, C. E.	Goods Checker

Award	Name	Railway post or grade
B.E.M.—(*contd.*)	Flegg, W. T.	Acting Temporary Stationary Machinery Attendant
	Harrison, H. J. ..	Length Ganger
	Hobdell, A.	Carter
	Hobdell, H.	Stableman
	Ithell, J. E.	Goods Guard
	Kilshaw, P.	Goods Guard
	Paxton, A.A.	Carter
	Rowland, J. E. ..	Goods Guard
	Taylor, H. J.	Chief Foreman
	Wright, A. E.	Passed Fireman
	Chandler, E. G. ..	Passenger Guard
	Stockton, H.	Temporary Ticket Collector
H.M. the King's, Police and Fire Services Medal	Huddart, W. P. ..	Detective Sergeant

LONDON & NORTH EASTERN RAILWAY

George Cross	Gimbert, B.	Engine Driver
	Nightall, J. W. ..	Fireman
M.B.E. ..	Rattray, R. P. ..	District Engineer
	Underwood, W. H. ..	Assistant District Locomotive Superintendent
George Medal	Barker, E. V.	Ticket Collector
	Harrison, A.	Chargeman Asphalter
	Haskey, E.	Bricklayer's Handyman
	Hume, R.	Yard Inspector
	Lackie, J.	Mason (Diver)
	Potter, F.	Examiner
	Stainton, T. H. ..	Engine Driver
	Steel, J.	" "
	Whitehurst, G. W. ..	Labourer
B.E.M. ..	Angus, J. W.	Shunter
	Bradshaw, A.	"
	Brown, G.	Assistant Traffic Agent
	Campbell, P.	Locomotive Foreman
	Colthorpe, C.	Yard Inspector
	Dobson, J.	Police Constable
	Fowell, G. H.	Shunter
	Great, J.	Engineman
	Hinch, G.	Stable Foreman
	Jackson, A. L. ..	Draughtsman
	Keeble, J. W.	Station Foreman
	Keld, M.	Ganger
	Lawson, W.	Porter
	Martin, A.	Stableman-in-Charge
	Price, R.	Transport Worker employed as A.R.P. Instructor
	Runicles, W. H. ..	Carpenter
	Smith, F. C.	Motor Driver
	Stannard, W.	Ganger
	Taylor, M. R.	Junior Porter
	Thompson, R. H. ..	Goods Shunter
	Thorburn, D.	Examiner
	Ward, L.	Yard Inspector
	Ward, R. S.	Guard

SOUTHERN RAILWAY

Award	Name	Railway post or grade
M.B.E. ..	Bassett, F.	Stationmaster
George Medal	Jeeves, S. R.	Bodymaker's Assistant
	Keen, G. F.	Sub-Ganger
	Leach, G. H.	Lengthman
	Quinton, J. W. ..	Goods Guard
	Savage, H. J.	Yardmaster
	Smith, W. C.	Charge Engineer
	Tichener, T.	Engine Driver
B.E.M. ..	Annetts, C. W. ..	Engine Driver
	Barclay, R. H... ..	Acting Lineman
	Bentley, A. V. ..	Station Lampman
	Blaber, D. E.	Carriage & Wagon Examiner
	Bowden, A. E. ..	Electrician
	Brereton, W.	Acting Detective
	Clouder, F. C.	Crane Driver
	Collins, W. T.	Locomotive Shed Foreman
	Dowle, H. A.	Fireman
	Foote, J.	Driver (Acting Locomotive Foreman)
	Gardner, H. J. ..	Engine Driver
	Griffen, A. T.	" "
	Newham, E.	Station Foreman
	Newman, A. V. ..	Locomotive Fireman
	Paul, A.	Carriage & Wagon Inspector
	Pinn, R. G.	Porter Signalman
	Rickman, V. G. T. ..	Clerk
	Sheldon, F. P. ..	Junior Charge Engineer
	Shipton, H.	Chargeman Examiner
	Sinden, E. H.	Station Inspector
	Smith, J. E.	Assistant Lineman
	Steele, C.	Permanent Way Ganger
	Stickells, C. A. ..	Fireman
	Waller, W.	Acting Regulator
	Ward, W.	Guard
	Winder, H.	Inspector

APPENDIX 20

HONOURS CONFERRED UPON RAILWAY STAFF EMPLOYED ON REQUISITIONED STEAMERS

(*Up to January* 1, 1946)

Great Western Railway

Award	Name	Railway post or grade
D.S.C.	Pitman, R. R.	Master, *St. Helier*
	Freeman, H. D.	1st Officer, *St. Hellier*
	Martin, F. E.	2nd Officer, *St. Helier*
D.S.M.	Walkley, C. J.	Quartermaster, *St. Helikr*
O.B.E.	Denzey, D. W.	Chief Engineer, *St. David*
	Sanderson, C. W.	Master, *St. Andrew*
M.B.E.	Sagar, R. H.	Chief Stoker, *St. Julien*
	Dyer, H. H. B.	Radio Officer, *St Andrew*
B.E.M.	de Carteret, A. T.	Quartermaster, *St. Andrew*
	Strand, J. H.	Greaser, *St. Andrew*
	Long, P.	Greaser, *St. Julien*
Lloyd's War Medal	Owers, E. W.	Master, *St. David* (posthumous award)

London Midland & Scottish Railway

Award	Name	Railway post or grade
M.B.E.	Burnitt, P.	Chief Engineer, Goole
	Hiley, A.	Master ,,
	Robinson, H.	Chief Officer ,,
	Fox, H. H.	Master ,,
D.S.C.	Hughes, W. H.	Master, Holyhead
D.S.M.	Lewis, J. E.	Seaman ,,
	Williams, W. P.	Bo'sun ,,
	Riddell, W. N.	Seaman ,,
B.E.M.	Gledhill, C	Steward, Goole
	Farmery, T. F.	A.B., acting Third Officer, Goole

London & North Eastern Railway

Award	Name	Railway post or grade
O.B.E.	Snowden, A. J. E.	Master
	Fea, T. E.	,,
	Brown, L. E.	,,
	Pickering, H.	,,
	Good, R.	,,
M.B.E.	Foster, G. A. J.	Chief Engineer
	Earnshaw, H. K.	Chief Officer
	Lyne, H.	Third Officer
	Draper, C.	,, ,,

Award	Name	Railway post or grade
M.B.E.—(*contd*).	Hackworthy, W. H. ..	Radio Officer
	Vann, E.	Master
	Adams, R. V.	,,
	Stephenson, R. L. ..	First Officer
	Wright, R. H. ..	,, ,,
D.S.C. ..	Baxter, C. R.	Master
	Oxenham, H.	Chief Engineer
	Jennings, H. W. ..	First Officer
	Atkinson, E.	Second Officer
D.S.M. ..	Rusby, F. W. J. ..	Deck Boy
	Mathieson, G.	Cook
B.E.M. ...	Murphy, C.	Chief Steward
	Forrester, I. J... ..	Donkeyman
	Mc Intyre, J.	A.B.
	Thomson, E. B. ..	A.B.
	Rowse, E. W.	Boatswain
	MacLeod, M.	A.B.
	Sannick, J. C.	Greaser
	Stephens, F. W. ..	Chief Steward
	Boscowitch, C. ..	Boatswain
	MacNeil, D.	Quartermaster
Lloyd's Medal	Lyne H.	Third Officer
	Draper, C.	,, ,,
	Wright, R. H.	Chief Officer
	MacNeil, D.	Quartermaster
" Emile Robin " Award	Greenham, A. W. R. M.	Captain
	Dalgliesh, R. E. ..	Chief Officer

SOUTHERN RAILWAY

Award	Name	Railway post or grade
O.B.E. ..	Addenbrooke, L. E. ..	Master
	Golding, H. H. ..	,,
	Mason, W. F.	,,
	Payne, H. L.	,,
	Smith, N.	Chief Engineer
M.B.E. ..	Fenner, W. A. ..	Second Engineer
D.S.C. ..	Crockart, J. R. ..	Second Engineer
	Hancock, C. A. ..	Master
	Hodges, F. W. ..	,,
	Jones, J. W. A. ..	Second Officer
	Robb, D.	Chief Engineer
	Tooley, G. F.	Second Engineer
	Walker, D. G.	Master
D.S.M. ..	Fowles, J.	A. B.
	Russell, A.	Quartermaster
B.E.M. ..	Barr, W.	Greaser
	Ford, W. T.	Assistant Steward
	Harper, W. H. N. ..	A.B.
	Hill, R. B.	Greaser
	Peacock, J. B. ..	Boatswain
	Rice, C. W.	A.B.
	Short, A. C.	Quartermaster
	Wyborn, C. N. L. ..	,,

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